2014 ANNUAL REPORT

BUFFALO POUND WATER ADMINISTRATION BOARD

CONTACT INFORMATION

The Buffalo Pound Water Treatment Plant is located approximately thirty kilometres northeast of the City of Moose Jaw, Saskatchewan, on Highway No. 301, seventeen kilometres north of the intersection with Highway No. 1.

The Plant's mailing address is P.O. Box 1790, Regina, Saskatchewan, S4P 3C8. The telephone number is 306-694-1377; Fax 306-694-6050.

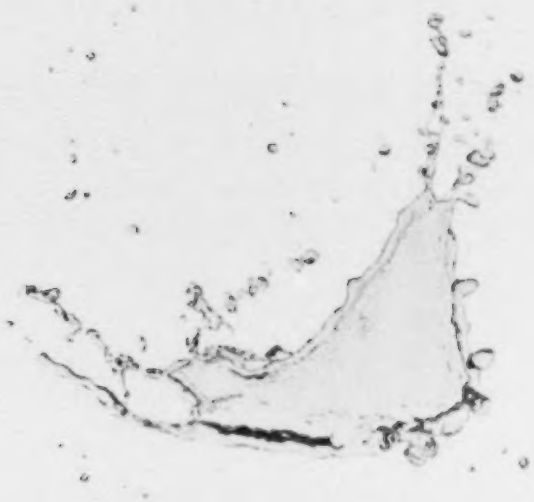
Plant management staff may be reached by email at the following addresses:

Ryan Johnson, General Manager:	RyanJ@buffalopoundwtp.ca
Dan Conrad, Plant Chemist:	DanC@buffalopoundwtp.ca
Rudi Sapach, Plant Engineer:	RudiS@buffalopoundwtp.ca
Gene Berezowski, Plant Foreman:	gberezowski@sasktel.net
Laurie Wilkinson, Office Manager:	LaurieW@buffalopoundwtp.ca

The City of Regina maintains a web site containing information about the Buffalo Pound Water Treatment Plant. This may be accessed by going to:
http://www.regina.ca/residents/water-sewer/water-publications/

Information about the Buffalo Pound Water Treatment Plant is also available from the City of Moose Jaw's website. This may be accessed by going to:
http://www.moosejaw.ca/?service=water-management

BUFFALO POUND WATER ADMINISTRATION BOARD

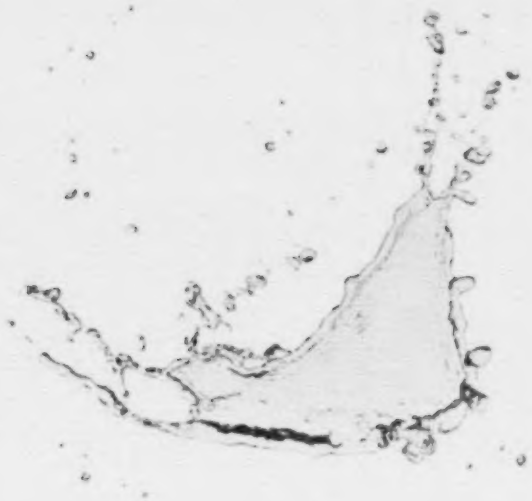


2014 annual report

City of Regina | REGINA
Infinite Horizons

Moose Jaw
SURPRISINGLY UNEXPECTED

BUFFALO POUND WATER ADMINISTRATION BOARD



2014 annual report

BUFFALO POUND WATER TREATMENT PLANT
ANNUAL REPORT - 2014

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BOARD CHAIRPERSON'S LETTER

On behalf of the Board members I am pleased to present the 2014 Annual Report of the Buffalo Pound Water Administration Board.

The Buffalo Pound Water Treatment Plant provided abundant quantities of water to our customers that met or exceeded regulatory requirements and our own standards. That our outcomes are achieved effectively and efficiently, and with a high level of system reliability, is a testament to the dedication, expertise and creativity of our staff.

The Board had a number of accomplishments and initiatives in 2014.

Mr. Ryan Johnson completed his first full year as General Manager. Under his leadership the Plant continued to fulfill its objectives for water quality and quantity production. He initiated a number of administrative changes at the Plant, most importantly the addition of an Office Manager and refurbishment of office space to relieve administrative duties from technical and operations staff. As well, he took on project management responsibilities for the Capital Upgrade Project. The Board undertook a new and more rigorous evaluation of the General Manager to ensure that performance aligned with objectives and expectations.

The Board completed and implemented elements from the governance review initiated in 2012. New systems, documentation and objectives were established to support the Board and facilitate improved performance of the Board. The Owners continued their work on addressing the partnership arrangement. Two noteworthy accomplishments were the execution of a Governance Protocol between the Board and Owners, and holding the first Board/Owners meeting in November. These resulted in a number of Board initiatives. A risk assessment of the Plant was completed. This informed the undertaking of a long range plan for capital work, especially related to aging infrastructure and security. Furthermore, performance measurement and benchmarking of the Plant were started.

There were also some challenges in 2014. A number of years of unusual weather has resulted in degraded raw water quality from Buffalo Pound Lake. This now persists through the whole year and requires changes to treatment resulting in increased cost. As well, specific asset deficiencies increased risk of operational disruption. Finally, succession of senior and skilled staff continues to be a concern.

In 2014 the Board representative from Moose Jaw changed with Mr. Tyrone Stokes leaving the Board. The Board thanks Mr. Stokes for his participation and contributions. A new appointee from Moose Jaw was made at year end.

The Board is grateful for the continued dedication of Plant management and staff in efficiently operating and maintaining the treated water supply for Moose Jaw and Regina.

Derrick Bellows, P.Eng., FEC, ICD.D

Chairperson

Buffalo Pound Water Administration Board

BUFFALO POUND WATER ADMINISTRATION BOARD
2014 ANNUAL REPORT

This report summarizes the activities and major events at the Buffalo Pound Water Treatment Plant (the "Plant") during 2014. The report outlines the Mission and Goals, achievements and areas of concern. It is intended as an information source for city administration personnel, elected officials and the general public. This report also contains the Drinking Water Quality and Compliance Report required by provincial regulations.

BUFFALO POUND WATER ADMINISTRATION BOARD

The Buffalo Pound Water Administration Board (the "Board") was created in 1951 by an agreement between the City of Regina and the City of Moose Jaw (the "Owners"). In accordance with the agreements, the Board is comprised of two senior members of the City of Regina administration and one senior member of the City of Moose Jaw administration.

BOARD MEMBERS

Derrick Bellows, P.Eng., FEC, ICD.D
Board Chairperson
City of Regina appointee

Chuck McDonald, B.A., B. Admin. CPA-CMA
Board Member
City of Regina appointee

January – June	Ty Stokes, P. Eng.
July – December	Mahabub Zaman, P.Eng.
	Board Member
	City of Moose Jaw appointee

WATER TREATMENT PLANT MANAGEMENT

Mr. R. Johnson, CD, M.A.Sc., P.Eng.	General Manager
Mr. D. Conrad, P.Chem.	Plant Chemist
Mr. R. Sapach, M.A. Sc., P.Eng.	Plant Engineer
Mr. E. Berezowski	Plant Foreman
Ms. L. Wilkinson	Office Manager

GENERAL MANAGER'S LETTER

On behalf of the Plant staff and management team, I would like to report that 2014 was a busy and exciting year here at the Plant. There was a lot of transition this past year, specifically with formalizing the relationship between the Plant, the Board and the Cities with the governance review and its implementation. WATSON completed the short term governance review and the recommendations were implemented by the Board in the first half of 2014 with the adoption of the Governance Policy Manual. The Cities commissioned WATSON to assist with the medium term recommendations in the last half of 2014 and the Cities and Board adopted the Governance Protocol.

The major capital project has progressed and the detailed design was nearing the 95% stage for the ultra-violet disinfection system and Archimedes screw pump. The construction tender will be issued early in 2015. The Plant electrical substation and related electrical work design proposal was approved with detailed design to commence in 2015. This capital work will allow the Plant to continue meeting regulatory requirements while mitigating some of the risks associated with the Plant's aging electrical system. The backlog of the smaller capital projects has been moving forward with seven being completed and two under design in 2014.

The unfunded program of work, which identifies work required to keep the 59 year old Plant operating into the future, was further developed and refined with the intent of minimizing risks to the Plant and ensuring the Plant is in regulatory compliance. A Pro Forma was completed for the Cities to identify how the unfunded program of work could be delivered with contemplated changes to the Governance structure. The unfunded program of work will need further development in 2015 before it can move forward.

This year was the first year that the Plant developed its own Key Performance Indicators. These KPIs will allow the Board and management team to better monitor the Plant's operations to ensure it is operating both effectively and efficiently. The Plant also started to participate in the National Water & Wastewater Benchmarking Initiative which compares other similar water treatment plants across Canada in their operations and performance. Again, this will assist the Board in making decisions on the Plant's operations.

The Plant performed its first comprehensive risk assessment to identify and prioritize risks. This will help target where operating and capital funding should be allocated to mitigate significant risks. The risks were generally related to failure of infrastructure, source water issues and human resources.

The operating budget experienced a shortfall as water sales were down in 2014. It was a cool year with the average annual temperature 2 degrees Celsius lower than the 40 year historical average. Only 6 days had temperatures over 30 degrees Celsius when on average there would have been 23 days. It was also a wet year as the Plant had 654 mm of rainfall which is significantly higher than the historical average of 283 mm. Expenditures were below the budget, however, they were not low enough to offset the low revenues from reduced water sales. The Buffalo Pound Lake's raw water quality was very poor in 2014 . It has not improved since 2011 due to spring flooding and source water management issues. As a result, the Plant chemical dosages and treatment costs have been unprecedentedly high. The poor water quality is not expected to change for several years unless the Water Security Agency increases the flow through the Buffalo Pound Lake.

The Plant was in full regulatory compliance with respect to the quality of treated water which was provided to our customers: City of Regina, City of Moose Jaw, SaskWater and the Buffalo Pound Provincial Park which, when combined, serves over 230,000 people.

I would like to again extend my sincere appreciation to all the Plant staff for their dedication and hard work to help us meet and achieve the Buffalo Pound Water Administration Board's Mission and Goals in 2014. Bravo Zulu!

Ryan Johnson, CD, M.A.Sc., P.Eng.

General Manager

Buffalo Pound Water Treatment Plant

MISSION AND GOALS

MISSION

* To provide for the Cities of Regina and Moose Jaw, a reliable and affordable supply of safe, high-quality drinking water which meet the needs and expectations of consumers.

GOALS

* Treated water that meets the quality expectations of the citizens of Moose Jaw and Regina, as well as meeting, or exceeding, all government regulated parameters.

* Operational practices and controls that ensure a continuous and safely-treated supply of water within an environmentally-responsible and cost-efficient operation.

* Judicious monitoring of the treated water from the Plant to the end of the Cities' distribution systems. Appropriate monitoring of the water in Buffalo Pound Lake, the Upper Qu'Appelle River and Lake Diefenbaker to identify long-term trends and areas of concern to protect the water supply.

* Water quality research to identify possible chemical and microbiological contaminants and to test and implement the best available treatment technologies, thus ensuring that the Water Treatment Plant can meet current and future expectations for regulated parameters.

RESOURCES

WATER SOURCE

Water for Regina and Moose Jaw is taken from Buffalo Pound Lake, a shallow reservoir in the Qu'Appelle Valley. The lake is 29 km long, 1 km wide but has an average depth of only 3 metres. The surface area of Buffalo Pound Lake is 2900 hectares inferring it has a capacity of 90 million cubic metres at the "full supply level" of 509.3 metres above sea level. Water levels in Buffalo Pound Lake are controlled by the Water Security Agency and maintained by the release of water from the Qu'Appelle Dam on Lake Diefenbaker. Mean annual water releases of 5 to 1 cubic metres per second are typical. Thus, the average residence time of water in the lake varies from six to thirty months. Very little water enters Buffalo Pound Lake from rain or spring runoff except in abnormally wet years. The principal source of the water is rain and snow-melt in the mountains of Alberta, collected by various tributaries draining to the South Saskatchewan River and stored in Lake Diefenbaker. As such, the water is potentially affected by discharges from point sources (upstream cities) and non-point sources (agricultural and recreational).

Buffalo Pound Lake is generally free of industrial pollution but is naturally rich in nutrients (phosphate, nitrogen and dissolved organic carbon) which encourage the growth of phytoplankton (typically diatoms in the winter and green algae or cyanobacteria in the summer). Weed growth can also be extensive. Algae and weeds pose many treatment challenges such as high chemical demands and undesirable tastes or odours. The lake and watershed appear to also be impacted by ground waters infusing minerals.

PLANT TREATMENT

Raw water from Buffalo Pound Lake passes through a series of treatment stages designed to remove impurities such as algae, bacteria, clay particles and dissolved organic materials. The objective of this treatment is to produce water that is clear, colourless, odour-free, aesthetically pleasing and safe to drink.

The treatment process consists of six stages: chlorination, cascade de-gasification, coagulation/flocculation, clarification, filtration and carbon adsorption.

Lake water enters a pumping station located on the south shore of Buffalo Pound Lake through two submerged intakes. Raw water is chlorinated and then pumped to the Plant via two pipelines connecting the pumping station to the main treatment plant. The pipelines are 1.05 and 1.35 metres in diameter, extend a distance of 3,000 metres and rise 82 metres. After reaching the Plant, water is initially divided into two streams, each of which has cascade de-gasification, coagulation/flocculation and clarification. The streams are then recombined for the final stages of treatment, including filtration, carbon adsorption and further chlorination.

Cascade operation is normally used during periods of excessive dissolved gas levels in the raw lake water. Excessive dissolved gases are most commonly produced by photosynthetic bacteria and algae. During cascade de-gasification, the water falls over a series of steps which releases excess dissolved gasses and prevents the formation of gas bubbles in later treatment processes. Clarification and filtration processes could be impeded by gas bubbles that attach to particles of floc, causing them to float, rather than sink, and by causing air binding in the filters.

If conditions warrant, Powdered Activated Carbon (PAC) is added to reduce taste and odour. The use of PAC, while relatively infrequent, is occasionally necessary when granular activated carbon contactors are off line or to temporarily reduce the odour loading when the contactors are on-line.

Coagulation and flocculation are the next steps in treatment. Aluminium sulphate (alum) is vigorously mixed with the water. In the process of coagulation, the alum neutralizes surface charges on particulate matter contained in the water and forms a fluffy precipitate (floc) that entraps suspended algae and clay particles. The water is then stirred slowly in flocculation tanks to allow floc particles to become larger and denser prior to their removal.

The floc-bearing water then flows through clarifiers, where most (more than 95%) of the floc with its entrapped impurities is allowed to settle by gravity to the bottom while clear water is constantly removed from the top. Settled floc is removed from the clarifiers as sludge and pumped to holding lagoons where it is further separated into clear water (returned to the lake) and solid sludge (removed for disposal).

Any floc that was not removed by clarification is separated in the filtration stage. Water is passed through mixed-media filters consisting of a top layer of coarse anthracite followed by successive layers of fine silica sand, and even finer garnet sand. Any remaining particulate matter or floc is trapped by the filters. Filters are cleaned by backwashing with clean water. The filtration step completes the removal of particulate impurities. The removal of dissolved organic impurities, which are responsible for taste and odour, is accomplished next in the carbon adsorption stage of treatment. Large rectangular tanks (contactors) contain Granular Activated Carbon (GAC) to a depth of 3 metres. Water is lifted by Archimedes screw

pumps from the bottom of the filters and taken to the top of the contactors where it is allowed to flow by gravity down through the GAC. GAC contains many microscopic pores which adsorb dissolved chemical impurities. Water is in contact with the GAC for 15 to 30 minutes, depending on flow rates, and emerges freed of the dissolved organic materials which cause objectionable taste and odour. The GAC filtration process at Buffalo Pound was designed for taste and odour removal and is used during periods of poor taste and odour in the raw water; the normal period of operation is from May until December.

All stages of water treatment are now essentially complete. Prior to delivery by pipeline to the consumers, chlorine levels are adjusted, if necessary, to provide adequate disinfection and to counteract any possible contamination encountered during its travel to the cities' reservoir and distribution systems. Water delivered to the City of Moose Jaw is also fluoridated during pumping.

The carbon used in the contactors retains its effectiveness for taste and odour reduction up to six months, after which time it must be regenerated or replaced. It was found to be cost effective as well as environmentally responsible to regenerate the spent GAC rather than to discard it and purchase new. Regeneration is accomplished by heating the spent GAC to 850° C in an oxygen-free atmosphere contained in a fluidized bed gas-fired furnace. Spent GAC is transferred by pipeline as a slurry from the contactors to the furnace, regenerated to process specifications, and returned to the contactors for reuse. Carbon regeneration is usually performed at Buffalo Pound from mid-October to mid-April.

ENVIRONMENTAL PROTECTION AND CONSERVATION

The Plant, like any large industrial facility, has the potential to affect the environment. The Plant has facilities in place to handle all process wastes including alum sludge, off gases from the carbon regeneration facility, laboratory wastes, various solid wastes generated by Plant operations, and sewage. The plant uses a considerable quantity of electrical energy in its operation; conservation efforts give returns in the form of reduced demands on the environment and lower operating costs.

A series of sludge lagoons is used in the treatment of the alum sludge waste stream. This form of sludge management can be very effective in ensuring that the sludge is retained. Sludge is exposed to a natural freeze-thaw cycle that dewaters it to produce a nearly dry granular material which is transported to a landfill site. Buffalo Pound is one of the few water treatment plants in Canada with the ability to manage waste sludge in this manner.

Because the Plant's lagoons were identified as being undersized in the 2005 and 2010 Water Works System Assessments, the unfunded program of work includes plans to improve residuals management.

The natural gas-fired furnace in the carbon regeneration facility produces off gases which are thoroughly scrubbed before release to the atmosphere.

Waste disposal agencies are contracted to handle laboratory wastes and solid wastes generated by the Plant. As it becomes necessary, firms specializing in hazardous waste disposal are contracted to dispose of chemical wastes.

Sewage generated by the Plant is pumped to treatment and evaporation lagoons located on Plant property. The primary lagoon has a geotextile fabric and bentonitic clay liner to prevent seepage.

Efforts are continuously made to utilize electrical energy in the most efficient fashion possible. The biggest consumers of power are the large pumps located at the lake pumping station and the units that pump water to the cities.

WATER QUALITY MONITORING

A well-equipped accredited laboratory is located on site and used to monitor the quality of raw and treated water as well as water quality at several intermediate steps in the treatment process. Major process control parameters (turbidity, pH, chlorine residual, particle counts, dissolved oxygen and temperature) are monitored continuously by instrumentation communicating with the Plant process computer system. Analyses are performed for most regulated parameters on a daily to monthly schedule; for other parameters (most trace-level organics and metals) samples are sent to commercial laboratories. Analytical results are compared to Canadian Federal guidelines and to Saskatchewan Ministry of Environment (MOE) objectives. All criteria for safe drinking water were satisfied by the Plant in 2014.

Analyses for a wide variety of physical, chemical, and microbiological parameters are performed in the Buffalo Pound Laboratory. Some 65 different constituents are routinely determined and approximately 25,000 tests are done annually. The 2014 results are summarized in Appendix 1. The 2014 results consist of the compliance report to the Water Security Agency as well as routine analysis of raw water and treated water quality.

The quality of the regenerated granular activated carbon is monitored by Plant staff for a variety of physical and chemical parameters.

A vigorous in-house quality control program is maintained to ensure data generated by the Plant Laboratory is valid. The laboratory is accredited by the Canadian Association for Laboratory Accreditation (CALA) for 31 different chemical and bacteriological parameters. The CALA external audit was conducted during the week of September 29, 2014. These audits occur every two years and are required for the laboratory to maintain its ISO accreditation. The audit and the preparation for the audit require a large amount of staff time and resources. Items of "non-conformance" were generally minor in nature and addressed within the given timeframes.

PLANT OPERATIONS AND MAINTENANCE

WATER PRODUCTION

Water Production and sales (in megaliters) were as shown in Table 1. (See also related Graphs 1 and 2.) Total sales to the cities in 2014 were 28,374 ML to Regina and 5,362 ML to Moose Jaw. Sales to Regina decreased 3.6% from 2013 and sales to Moose Jaw decreased 6.0%.

Four water sale records were broken in 2014: January, February, March and April. This was primarily due to water main breaks in the cities which increased the water demand. Overall, 2014 was a wet and cool year which resulted in actual water sales being down from the cities' forecasted demands.

Sales to the SaskWater Corporation in 2014 increased by 3.5%, to 235 ML. Sales to SaskWater represent less than one percent of the Plant's production.

Graph 3 shows annual water production by year since the Plant began operation in 1955.

PLANT OPERATIONS

The processes employed at the Buffalo Pound Water Treatment Plant are modified during the year as required by changing water quality in Buffalo Pound Lake. The granular activated carbon contactors were put into operation on May 15th to remove taste and odour originating in the lake water. They remained in service until December 9th when they were taken offline to be thermally regenerated.

Lake water quality continued to deteriorate during 2014. The Water Security Agency maintains the full service level of Buffalo Pound Lake at 509.3 meters above sea level. Diversions of better quality water from Lake Diefenbaker have been reduced for the last few years because of flood events and higher than normal precipitation. Flood waters from the Moose Jaw River backed up over the Buffalo Pound Lake Dam in both 2011 and 2013. Over 650 mm of rain was recorded at the Buffalo Pound weather station in 2014. Unlike Lake Diefenbaker water, water entering the lake from the local watershed exerts a higher than normal demand on treatment chemicals, both the alum used for particle removal and chlorine used for disinfection. Alum doses in 2014 averaged 92 mg/L, 70% higher than the 55mg/L average dose in 2010. The reason for this higher than normal chemical demand is the amount and character of humic matter that originates in the watershed and is transported into Buffalo Pound Lake.

This is measured as dissolved organic carbon. In watershed sampling carried out this year, the dissolved organic carbon of Lake Diefenbaker water was measured to be 4.6 mg/L while that in Buffalo Pound Lake rose over the year from 5.9 mg/L in January to 10.2 mg/L by year's end. The character of the dissolved organic carbon is different from that normally found in Buffalo Pound Lake being particularly reactive with the chorine used to disinfect bacteria and viruses. Unfortunately, unless the Water Security Agency increases flows from Lake Diefenbaker into Buffalo Pound Lake, the lake water quality will not improve.

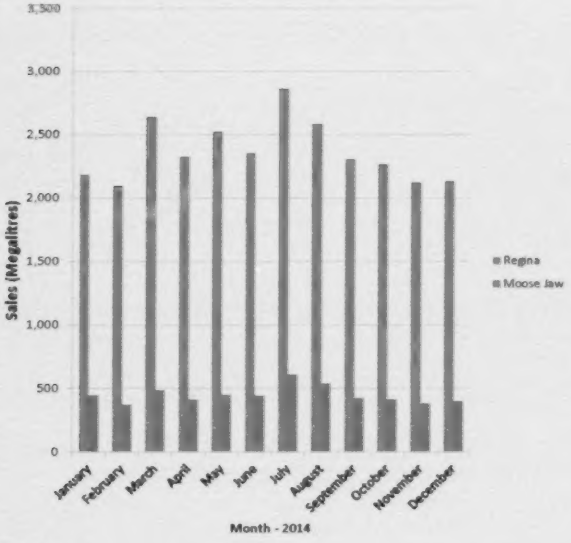
Weather had a role to play in reduced water sales to our customers in Regina and Moose Jaw. The average annual temperature in 2014 of 1.4 °C recorded at Buffalo Pound Lake was 2 degrees cooler than the long-term average.

Table 1: 2014 WATER SALES (MEGALITRES)
BUFFALO POUND WATER TREATMENT PLANT

MONTH	REGINA	MOOSE JAW	SASK WATER CORP.
January	2183.6	446.1	16.8
February	2095.6	371.5	16.2
March	2640.7	487.0	18.8
April	2321.0	409.4	22.0
May	2519.3	450.8	25.5
June	2354.1	441.4	23.0
July	2859.7	605.3	25.7
August	2581.1	535.2	20.4
September	2304.7	423.1	19.8
October	2264.3	412.3	15.1
November	2119.3	381.0	16.3
December	2130.6	398.7	15.7
Totals	**28,373.95**	**5,361.8**	**235.3**

Graph 1

BUFFALO POUND WATER TREATMENT PLANT
MONTHLY SALES TO REGINA & MOOSE JAW - 2014



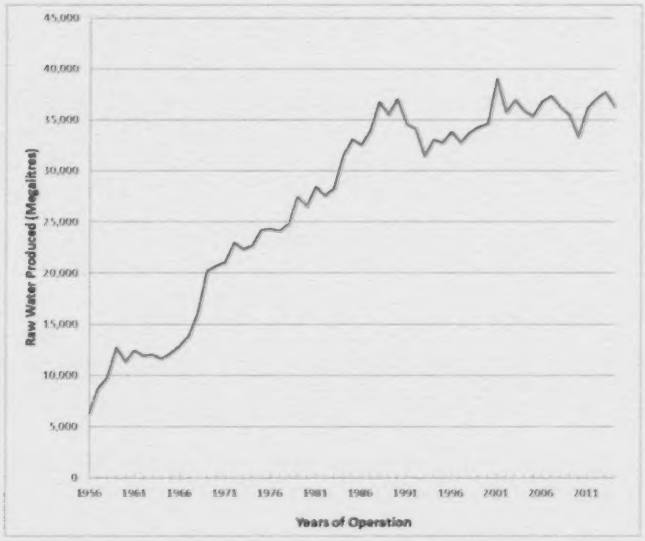
TOTALS
Regina **28,374 ML** Moose Jaw **5,362 ML**

Graph 2

BUFFALO POUND WATER TREATMENT PLANT
ANNUAL SALES TO REGINA & MOOSE JAW
1967 - 2014

Graph 3

BUFFALO POUND WATER TREATMENT PLANT
ANNUAL RAW WATER WITHDRAWN
1955 - 2014



Winter and spring were much cooler than normal with average daily temperatures 5°C and 4°C lower than expected respectively. Ice cover cleared from the lake on May 5th, two weeks later than normal. Average summer and autumn temperatures were closer to normal but without any sustained hot weather. Only 6 days had temperatures over 30°C while 23 hot days would be more typical. The lake froze over on November 12th, which is about the average expected date. Rainfall at Buffalo Pound totalled 654 mm which is more than double the 283 mm average rainfall.

CARBON REGENERATION FACILITY

The carbon is regenerated during the winter so that it can be used to remove taste and odour from the water the following summer. The 2013/2014 regeneration season was from November 7, 2013 to March 13, 2014. The 2014/2015 regeneration season commenced November 12, 2014.

WASTEWATER FACILITY

The clarifier underflow removes particulate matter (alum sludge) from the raw water. The effluent stream is directed to alum sludge lagoons where the sludge is deposited and the clear water overflow returns to Buffalo Pound Lake. The sludge from the stockpile location was removed to the Moose Jaw landfill. The sludge from the north-east summer lagoon was excavated to the stockpile location.

MAINTENANCE AND CAPITAL PROJECTS

Effective maintenance plays a key role in keeping the Plant running efficiently and producing high quality water. All vessels are drained, cleaned and inspected at least annually. All critical Plant equipment is inspected, tested and maintained at least annually to help ensure satisfactory operation during peak flow demands. All water quality monitoring instruments are checked or calibrated in accordance with the Quality Assurance/Quality Control Policy. The results from major on-line instruments are compared to laboratory instruments.

Eight projects were completed with funds from the Capital Replacement Reserve for a total cost of $516,346.00. Highlights of the Capital Work consisted of replacing backwash tank supply pump, replacing Lake Pump Station Pump "D", effecting roof repairs, relining and repair of the 2nd alum tank and replacing the screw pump gearbox. Design for the security upgrade commenced as well as the design for the 1955 Pumpwell slab rehabilitation to be completed in 2015.

In addition to the projects funded by the Capital Replacement Reserve other smaller projects were completed including the office renovations, ceiling tile replacement, motor overhauls, painting and SCADA maintenance.

MAJOR CAPITAL UPGRADE PROJECT

The Cities committed funds in 2010 to upgrade the Plant. The project initially intended to: add ultraviolet disinfection to ensure the deactivation of protozoa cysts; improve the handling of treatment plant residuals; add an additional screw pump; increase the clear well storage capacity; provide corrosion control and address overall water treatment upgrades for the Plant.

The electrical failures experienced in 2011, the vulnerability assessment study in 2012 as well as the transformer failure in 2013, determined that capital expenditures need to be made to improve the overall reliability of the electrical supply systems in the Plant and lake pumping station. An electrical master plan study was carried out and identified issues that need to be addressed as part of the Plant upgrades.

As the project progressed, pilot testing, condition assessments and studies clarified what works were the most critical. By 2013, the predesign concept cost estimates for the project exceeded the funds available. The scope was reviewed to determine the most urgent items required to be included which are also within the approved budget.

The current Major Capital Upgrade Project scope now includes the ultraviolet disinfection system; an additional Archimedes screw pump; replacement of the Plant's electrical substation and related electrical work for approximately $34.7 Million. The remaining scope of work is currently placed in an unfunded program of work which will be addressed at a later date. None of the work in the Major Capital Project or the unfunded program of work includes expansion of the Plant.

In 2014, the UV Disinfection Facility project completed its Preliminary Design and completed 75% Detailed Design. The pre-purchased UV reactors were shipped from the factory in Germany, and equipment supply tenders were awarded for the large diameter pipe, flow meters, valves, sluice gates and screw pump. The Electrical Substation replacement project was awarded for preliminary design and detailed design.

UNFUNDED PROGRAM OF WORK

The unfunded program of work includes all the work which, due to costs or other priorities, could not be completed in the Major Capital Project. This scope of work is still necessary to ensure the Plant continues operating into the future. Worthy of note is the last major Plant upgrade was undertaken in 1989. The unfunded program of work will also assist in addressing the most significant risks that have been identified in the Risk Review which was completed in 2014.

The highlights for the scope of work currently includes: (i) construction of a proper chlorine storage building at the lake which meets regulations (ii) conversion of the granular activated carbon to a biological activated carbon process which utilizes ozone (iii) expansion of the lagoons to meet the residuals generated by the Plant (iv) upgrading the Plant's primary filters (v) development of electrical redundancy at the Plant; provision of Arc Fault protection; provision for backup power at the Plant and Lake Pump Station and all related electrical work. These projects have been identified as the major items requiring attention to date. The very preliminary estimate for the work is estimated at $140 million if completed by 2021. This work will not allow the Plant to produce any more water but will allow it to continue operating while meeting regulations and minimizing the risk of the Plant failing to operate.

The governance review process has identified a mechanism to allow the Board to proceed with implementation of the unfunded program of work in the future but cannot be acted upon at this time.

GOVERNANCE REVIEW

The governance review has been ongoing since 2012 which was the first substantial review since 1951. The short-term recommendations were developed in 2013 and accepted by the cities in January 2014. WATSON, together with the Board and General Manager, implemented the short-term recommendations from the Final Report during the first half of 2014.

The Board approved the Governance Policy Manual. This allowed the cities to proceed with the second phase of the governance review by reviewing the medium term recommendations. The very first Mid-Year Owners' Meeting was held at the Plant on November 4, 2014.

The medium term governance review commenced in July 2014 with the cities commissioning WATSON to take the lead with the Board and General Manager to provide assistance, as required. The cities met on August 28, September 24 and November 4 with WATSON, the Board and General Manager to discuss changes to the governance structure. From these discussions, the cities approved the Governance Protocol. The remaining medium term recommendations are still under review by the cities.

This is a significant step in improving the Governance between the cities, Board and General Manager for the Plant. The remaining steps include engaging both City Councils and continuing with improvements to the governance structure in 2015.

RISK REVIEW

The Board developed its first comprehensive Risk Review in 2014. There were thirty five risks identified which could impact the Plant's ability to produce and transmit water to its customers. Of these risks, the probability and consequence varied. The top ten risks, which range from an overall medium to high risk rating, have been reviewed in greater detail and can be mitigated through the operating budget, capital budget or the unfunded program of work. It is important to note that three of the ten highest risks are related to the loss of power to either the Main Plant or the Lake Pump Station.

NATIONAL WATER AND WASTEWATER BENCHMARKING INITIATIVE

The Plant is now part of the National Water and Wastewater Benchmarking Initiative which allows the Plant to compare its operations to other similar facilities across Canada. This information can then be used to assist in decision making and identifies where the Plant excels and areas for improvement. The data for 2014 is limited as this is the first year of the Plant's participation.

REGULATORY AND GOVERNMENTAL AFFAIRS

In December 2002, the Provincial Government introduced new Water Regulations dealing with water and wastewater facilities. These comprehensive regulations are intended to improve water quality and reporting accountability. The Water Security Agency conducted two routine inspections of the Plant first in March and the second in September; no deficiencies were noted. Since these regulations have been in place, not one deficiency has been observed on any inspection.

The Water Security Agency and the Saskatchewan Ministry of Environment share responsibility and authority for the administration of The Environmental Management and Protection Act, 2002 and The Water Regulations, 2002 as pertaining to prescribed waterworks or sewage works in Saskatchewan. The Ministry of Environment, in conjunction with the Water Security Agency, conducted an Environmental Compliance Audit of the Buffalo Pound Water Treatment Plant.

An audit of the Buffalo Pound Water Treatment Plant was undertaken from November 25-27, 2014. The scope of the audit included the (i) management of water quality and (ii) maintenance of records and logs.

As a result of the audit, four positive findings; four findings (Type 1 - minor); three referrals (2 Type 1 - minor and 1 Type 2 – non-compliant) and one opportunity for improvement were identified. Plant Management was required to submit to the Province, a corrective action plan to address the four (Type 1 – minor) findings which were satisfactorily completed. The

Type 1 (minor) referrals will be addressed through the required permits while the Type 2 (non-compliant) for the chlorine storage shed and the opportunity for improvement of a lack of back-up power will be addressed through the unfunded program of work.

The Plant's Permit to Operate is in effect to January 1, 2017.

One requirement of the regulations is that the laboratory analytical work required by a Water Treatment Plant's Permit to Operate must be done by an accredited laboratory. The Buffalo Pound laboratory fulfilled all requirements to maintain accreditation from the Canadian Association for Laboratory Accreditation (CALA). The laboratory participated in four sets of proficiency test analyses.

The Water Regulations require that the plant submit results of the weekly bacteriological, monthly trihalomethane and quarterly major ion analyses promptly to The Water Security Agency and that a Drinking Water Quality and Compliance Report be published annually.

The required Drinking Water Quality and Compliance Report is provided in the in the Appendix. The Plant met all sample submission requirements of the Plant's operating permit. The Plant is in full compliance with the Water Regulations.

Plant operations are subject to the Federal National Pollutant Release Inventory (NPRI) Legislation, Canadian Nuclear Safety Commission (CNSC), as well as the Environmental Emergency Regulations. The required inventory submissions were made to the NPRI program. Radioactive substances are used in the laboratory's electron capture detectors. Although the licence requirements for electron capture detectors have been terminated by the CNSC, swipe tests are still conducted as part of the general maintenance program. Swipe tests, ensuring the integrity of these detectors, were sent to Saskatchewan Labour for analysis; no leakage above the guidelines was detected.

HUMAN RESOURCES

In 2014, the Plant employed a total staff of 31, consisting of five out-of-scope managers, nine operating staff, five laboratory technologists, seven journeyman maintenance persons, three maintenance persons, and two labourers. The in-scope staff is represented by UNIFOR Local No. 595.

In 2014, the Plant lost one of its employees to retirement and accepted the resignation of another (due to retirement in early 2015).

Staff at the Plant participates in the Regina Civic Employees Pension Plan. The General Manager participated in several meetings to attempt to address the Pension Plan's large unfunded liabilities. Negotiations in 2014 were continued and an agreement between the owners and employee representatives was successfully agreed to, in principle, to meet the Superintendent of Pensions' requirements by the end of the year.

The UNIFOR Local No. 595 Collective Agreement was negotiated and accepted by the Board and the union membership early in 2014 for the term of January 1, 2014 to December 31, 2016.

A "Years of Service" awards was held on September 6, 2014. This was the 3rd annual awards evening specifically held for Buffalo Pound staff.

WATERSHED PROTECTION

The Plant continues to be involved in consultation processes dealing with watershed protection in the Upper Qu'Appelle River and Buffalo Pound Lake. The General Manager attended the Annual General Meeting on May 1, 2014.

MISCELLANEOUS

The Fluoride monitor, which is used for the City of Moose Jaw, failed and was out of service from October 31 until February 18 for repairs.

The General Manager and a Board member attended the National Water and Wastewater Benchmarking Initiative Workshop in Halifax, NS.

The Plant Engineer, Plant Chemist and the General Manager attended the Western Canada Water and Wastewater Association conference in Regina.

The General Manager attended the Windows on Ottawa workshop and meetings in Ottawa.

The Plant Foreman and four staff members attended the Saskatchewan Water and Wastewater Association annual conference in Saskatoon.

RESEARCH AND ANALYTICAL PROGRAM PROCESS DEVELOPMENT

Deteriorating raw water conditions in Buffalo Pound Lake have made water treatment more challenging over the last few years. Alum doses have steadily increased and occasionally very high doses are required during winter conditions. These high doses consume alkalinity and lower the treated water pH. This lower pH is more aggressive in terms of its potential corrosion of metal pipes. Alternate coagulant chemicals have been evaluated to ensure the provision of high quality drinking water.

After testing at bench-scale and short-term full plant trials, a polyaluminum chloride coagulant was chosen for long-term evaluation. This particular coagulant is not compatible with stainless steel piping and so modifications were made to one alum tank to permit the use of that chemical. Treatment of 60% of the Plant flow with polyaluminum chloride commenced on November 3rd, 2014. At this split flow, most of the older style filters receive polyaluminum chloride treated water while the newer and generally better performing new filters received alum treated water. On an equivalent aluminum basis, the polyaluminum chloride dose is approximately 80% that of alum. The filter effluent turbidities from the polyaluminum chloride treated water are consistently lower than those receiving alum treated water. Other benefits from this chemical are lower aluminum residuals in the treated water and a higher pH that makes the water somewhat less corrosive to metal pipes.

When considered on an equivalent basis of concentration polyaluminum doses are only 80% those of alum. This has resulted in a small cost saving. Polyaluminum chloride seems best suited to treat our water during cold water conditions and its use is planned for the period of October through April. During warm weather conditions alum remains the coagulant of choice as it is better suited to deal with the daily changes in water quality caused by algae growth.

Granular activated carbon contactors were installed in the Plant to remove undesired tastes and odours associated with algal growth in Buffalo Pound Lake. The piloting work completed as part of our upgrade project considered the option of ozone assisted biofiltration rather than the conventional operation of GAC contactors. The evaluation of biological activity in the contactors as operated today was carried out. Dissolved oxygen, dissolved organic carbon UV adsorption and heterotrophic plate counts were monitored over the period of May thru November.

Dissolved oxygen and characterization of the DOC removed proved useful in demonstrating significant biological activity during warm water periods (June – August). Biological activity is valuable as DOC and odour molecules are consumed by beneficial microorganisms and thus lengthen the useful period of GAC operation.

PERSONAL CARE PRODUCTS AND PHARMACEUTICALS IN THE BUFFALO POUND LAKE WATERSHED

Surveys for various pharmaceutical metabolites and personal care products have been carried out since 2009 in the Upper Qu'Appelle River and Buffalo Pound Lake to identify if any potential problem or concern exists. The suite of analytes tested for has been expanded over the years and now includes musks, hormones, sweeteners and many other compounds.

High levels of rainfall were received within the Upper Qu'Appelle River Watershed in 2014. Over 650 mm of rain was recorded at the Plant weather station between April and November. Releases of Water from the Qu'Appelle Dam were terminated in early spring and only a small amount of water was released during a test of hydraulic capacity in the Elbow Diversion Canal in October. Laboratory staff did manage to obtain samples from Lake Diefenbaker, near Marquis, Buffalo Pound Lake west of the Hwy 2 causeway and at our lake pumping station in July.

Unlike previous years no chemicals associated with human wastewaters were detected in Lake Diefenbaker or near Marquis. A single fluoroquinolone antibiotic, Ciprofloxacin, was detected within Buffalo Pound Lake at 20 parts per trillion. More prevalent were the various herbicide chemicals detected at Marquis and Buffalo Pound Lake West. These included 2,4-D, MCPA, Bentazon and Fluoroxypyr which were all detected at the parts per trillion level. These were also detected in Buffalo Pound Lake but at concentrations 5 to 10 times lower. With the exception of 2,4-D, (8 parts per trillion) these compounds were not detected during routine winter sampling.

All detectable compounds were found at exceedingly low levels, much lower than the drinking water guidelines. These compounds are reduced to non-detectable levels during summer time GAC operation when raw water concentrations are somewhat higher but still quite low. However, this does emphasize that the impact of human activity is detectable and good practices within the watershed are necessary to maintain the water quality within Buffalo Pound Lake.

WATERSHED MONITORING

Monitoring of the Upper Qu'Appelle River watershed including Buffalo Pound Lake is typically carried out on an annual basis. In 2014, watershed sampling on a limited number of the usual sites was carried out only once on July 8th. Sampling was curtailed due to the lack of water released from Lake Diefenbaker. What the accomplished sampling did show was that dissolved organic carbon levels in Buffalo Pound Lake were double those found in Lake Diefenbaker.

The Marquis sample was most impacted by run off from the watershed having exceedingly high levels of dissolved organic carbon. The character of organic carbon has also changed to be more humic in character and thus exerting higher coagulant and chlorine demands upon our treatment plant.

Raw water was analyzed more frequently during 2014 and demonstrated the deleterious impact of run off from the watershed. Dissolved organic carbon levels more than doubled between April and December of this year. This poor raw water

quality cannot be expected to improve any time soon.

At the end of the year, the diversion rate of better quality water from Lake Diefenbaker was only 1 cubic meter per second. At that rate, the residence time of water within Buffalo Pound Lake is nearly three years.

This year the Plant assisted Dr. Helen Baulch from the University of Saskatchewan in her NSERC funded project "Understanding lake metabolism and nuisance algal metabolites: New tools for management of potable water sources". Instrumentation, Millwright and Electrical staff assisted with the assembly and deployment of a water quality monitoring buoy. This buoy provided near real time measurements of water quality.

The buoy measured parameters near the surface and 1.5 meters below surface uploading data to a website that was accessible to Plant staff. The first assessment of data revealed that water quality could change exceedingly quickly with changes in wind direction. The sensor also demonstrated large variations in water quality between the surface and water only 1.5 meters below the surface. This confirmed that the lake water quality can vary with depth over very short time scales. Laboratory staff ramped up their sampling frequency to provide valuable insights into sensor data and raw water quality. For example, the laboratory data showed the usefulness of a phycocyanin sensor in providing estimates of cyanobacterial numbers. This field work and support will continue for another two years.

OPERATIONS BUDGET

The 2014 water rate for the cities of Regina and Moose Jaw increased by 0.95% from the 2013 rate to $227.15 per Megaliter. The electrical rate was set at $0.08382 per KWH for 2014; an increase of 6% from 2013. The cities of Regina and Moose Jaw forecasted water sales of 29,500 ML and 6,200 ML respectively.

Total actual water sales to the cities in 2014 were 28,374 ML to Regina and 5,362 ML to Moose Jaw. Sales to Regina decreased 3.6% from 2013, and sales to Moose Jaw decreased 6.0%. Operations at the Plant resulted in a deficit of $265,062 in 2014.

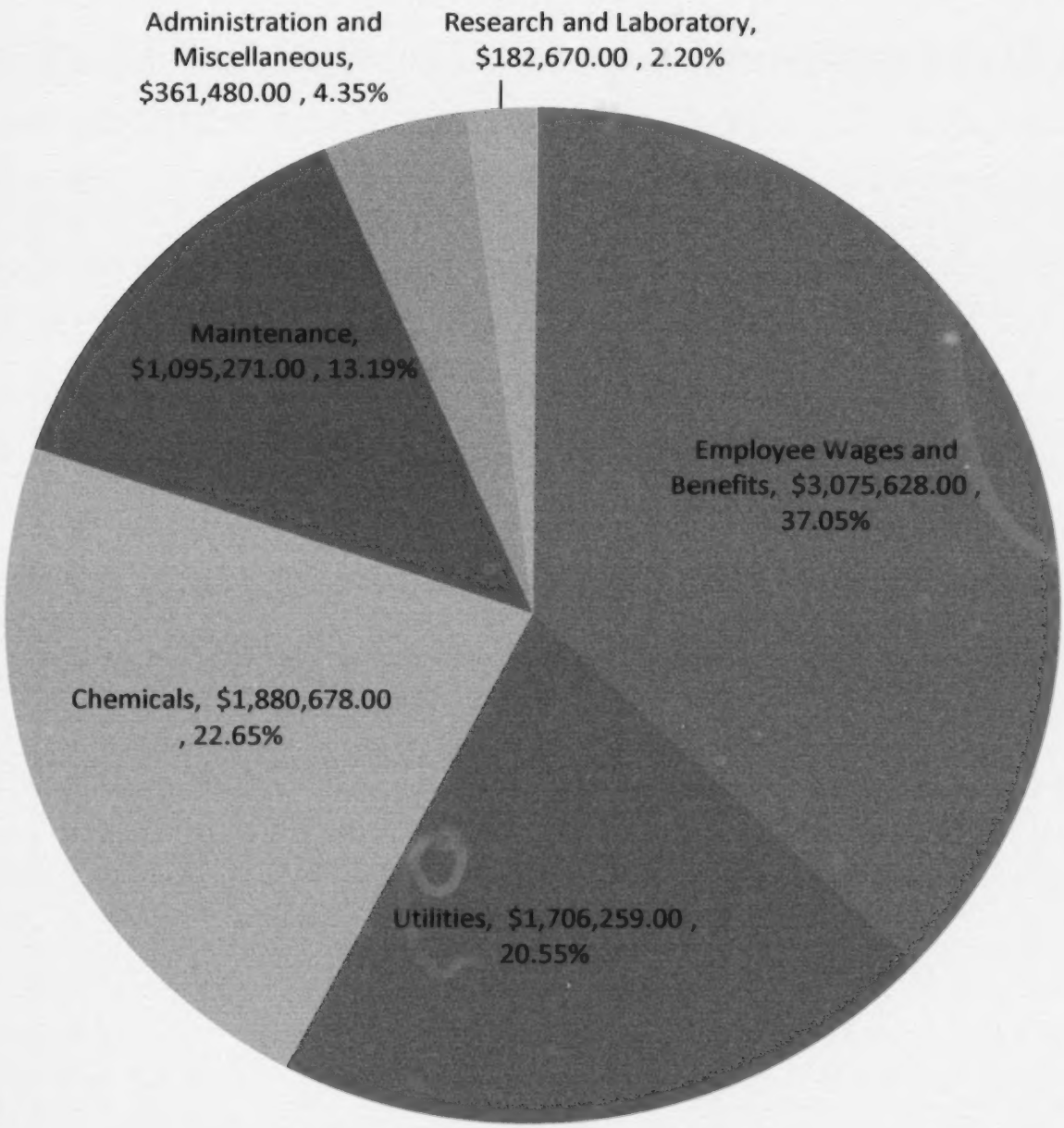
The largest contribution to the deficit was the water sales being lower than forecasted by $498,876 due to a cold and wet year. The actual expenses of $8,301,986 were under the budget of $8,535,800. This is not proportional to the reduction in water sales primarily due to the poor raw lake water quality. The amount of chemical required to treat the water was higher than expected and this has been trending an increase since 2011 when the Moose Jaw River first backed up into Buffalo Pound Lake.

Other expenses over budget were related to the cost of hiring the consultant for the governance review, natural gas usage due to cooler than average temperatures, a major failure of a raw water supply line and work required to de-sludge a lagoon.

Audited financial statements are contained in Appendix 2. Graph 4 summarizes expenses for 2014 as a percent of the total budget.

Graph 4

BUFFALO POUND WATER TREATMENT PLANT
SUMMARY OF OPERATING EXPENSES - 2014


Administration and Miscellaneous, $361,480.00 , 4.35%
Research and Laboratory, $182,670.00 , 2.20%
Maintenance, $1,095,271.00 , 13.19%
Employee Wages and Benefits, $3,075,628.00 , 37.05%
Chemicals, $1,880,678.00 , 22.65%
Utilities, $1,706,259.00 , 20.55%

TOTAL EXPENSES: $8,301,986.00

APPENDIX 1

APPENDICES

Appendix 1: Water Quality Analytical Data – 2014
Drinking Water Quality and Compliance Report for 2014
Raw and Treated Water Analyses
Appendix 2: Audited Financial Statements – 2014

APPENDIX 1

BUFFALO POUND WATER TREATMENT PLANT LABORATORY

Water Quality Analytical Data - 2014

Moose Jaw / Regina, Saskatchewan
December 2014

BUFFALO POUND WATER TREATMENT PLANT

DRINKING WATER QUALITY AND COMPLIANCE REPORT FOR 2014

INTRODUCTION

The Water Security Agency requires each Permittee to monitor water quality as stipulated under its Permit to Operate a Waterworks. Permittees are also required to prepare an annual report to their customers and the Saskatchewan Water Security Agency summarizing the analytical results of the monitoring in a report entitled "Drinking Water Quality and Compliance Report."

For more information about the meaning and type of sample refer to the Water Security Agency's "Municipal Drinking Water Quality Monitoring Guidelines, or the associated website http://www.saskh2o.ca/DWBinder/epb202.pdf.

The guidelines for Canadian Drinking Water Quality are developed by the Federal – Provincial-Territorial Committee on Drinking Water and are published by Health Canada. The province of Saskatchewan utilizes the guidelines in issuing Permits to Operate for regulated water works. Guidelines for chemical and physical parameters are either:

1. health based and listed as a Maximum Acceptable Concentration (MAC);
2. based on aesthetic considerations and listed as an Aesthetic Objective (AO); or
3. established based on operational considerations and listed as an Operational Guidance value (OG).

Throughout this document the analytical values are reported as well as the units of measure. Many parameters are not detectable in the treated water. Wherever the "less than sign" (<) is used it is followed by the method detection limit. This means that the parameter was not detected at or above the level indicated.

WATER QUALITY STANDARDS – BACTERIOLOGICAL QUALITY

According to its Permit to Operate a Waterworks the Plant is required to analyze one sample every week from the treated water for Bacteriological Quality. Coliforms were never detected in the treated water.

Parameter	Limit	Number of Samples Submitted	Number of Samples Exceeding Limit
Total Coliforms	0 per 100 ml	52	0
Background Organisms	<200 per 100 ml	52	0

WATER QUALITY STANDARDS – FILTER TURBIDITY

The Plant is required to monitor the effluent turbidity from all twelve filters on a Continuous Basis. The turbidity from each individual filter shall be less than 0.3 NTU, 95% of the time. The turbidity shall not exceed 0.3 NTU for more than 12 consecutive hours and shall never exceed 1.0 NTU. If, on those occasions when the monthly average of the source water turbidity is less than 1.5 NTU, the water turbidity levels from each filter must be less than 0.2 NTU, 95% of the time, the turbidity shall not exceed 0.2 NTU for more than 12 consecutive hours and shall never exceed 1.0 NTU.

This Plant's SCADA Control System automatically generates an alarm if a filter effluent turbidity exceeds 0.3 NTU. If the turbidity exceeds 0.4 NTU at any time, the Plant's SCADA Control System automatically closes the filter effluent valve, turning off the filter. The Plant's operating permit requires on-line turbidity monitoring on the effluent of each of its twelve filters. A problem with the turbidity monitor or data transfer system to the Plant's SCADA requires a shutdown of the affected filter. To address this possibility, the Plant has a second independent turbidimeter on each filter so that continuous monitoring can be maintained even if the first turbidimeter fails.

WATER QUALITY STANDARDS – FLUORIDE

The Plant adds fluoride to the water pumped to the City of Moose Jaw and is required to monitor the fluoride level in that water on a continuous basis. The Maximum Acceptable Concentration (MAC) is 1.5 mg/l. Alarms signal a high residual dose at 1.3 mg/L. Fluoride was added to Moose Jaw's water from January 1st through September 29th. Addition was terminated when the fluoride monitor which provides continuous measurements of fluoride concentration failed and was sent away for repair.

The maximum recorded level of fluoride via a laboratory analysis for water pumped to Moose Jaw was 0.91 mg/L. Fluoride in the water destined for Moose Jaw averaged 0.71 mg/L during the period when fluoride addition was carried out.

WATER QUALITY STANDARDS – CHLORINE RESIDUAL

To ensure adequate disinfection the Plant must monitor the chlorine residual of the treated water on a continuous basis and the free chlorine residual shall not be less than 0.1 milligrams per litre. The normal operating range for the free chlorine residual in the treated water is 0.9 to 1.1 mg/l. The SCADA control system will automatically shut off pumping to the Cities if the chlorine level is less than 0.5 mg/l. A high level chlorine alarm will alert the operator if chlorine levels in the clearwell exceed 1.3 mg/L.

WATER QUALITY STANDARDS – CHEMICAL – GENERAL

As part of the Plant's "Permit to Operate" a general chemical analysis is required once in every three month period from the treated water. Only two of these parameters have an established Maximum Acceptable Concentration (MAC). Eight others have an Aesthetic Objective (AO) which is desirable but has no impact on human health.

Parameter (mg/l) unless stated	Feb. 10	May 12	Aug. 11	Dec. 8	MAC	No. of Samples Exceeding MAC or AO
Nitrate	0.53	0.93	0.49	0.35	45	0
Fluoride	0.12	0.08	0.07	0.10	1.5	0
					AO	
Alkalinity	171	81	87	184	500	0
Chloride	26.15	15.61	26.84	50.91	250	0
Hardness	269	140	197	305	800	0
Magnesium	29.8	14.2	22.5	34.6	200	0
pH (pH units)	7.26	7.04	7.03	7.45	6.5 – 9.0	0
Sodium	78.6	33.2	66.3	115.6	300	0
Sulphate	237	117.9	231.5	313.1	500	0
Total Dissolved Solids	540	282	474	706	1500	0
Carbonate	ND	ND	ND	ND		
Calcium	57.2	33.6	43.2	62.0		
Conductivity (uS/cm)	805	445	704	1081		
Bicarbonate	208	99	106	225		

ND – Not Detected

WATER QUALITY STANDARDS – CHEMICAL – HEALTH

The Plant is required to sample the treated water for the following parameters once in every six month period. Eight of these parameters have an established MAC. Five parameters have guideline values which establish a target that could be expected from well functioning water treatment Plants or are aesthetic objectives for the taste or appearance of treated water.

Parameter (mg/l)	May 7, 2014	Nov. 24, 2014	MAC	Number of Samples Exceeding Limit
Arsenic	0.0003	0.0005	0.010	0
Barium	0.038	0.072	1.0	0
Boron	0.03	0.13	5.0	0
Cadmium	<0.00001	<0.00001	0.005	0
Chromium	<0.0005	<0.0005	0.05	0
Lead	<0.0001	<0.0001	0.01	0
Selenium	0.0002	0.0004	0.01	0
Uranium	<0.0001	0.0007	0.02	0
			Guideline	

Aluminum	0.028	0.022	0.1	0
Copper	<0.0002	<0.0002	1.0	0
Iron	0.0010	0.0008	0.3	0
Manganese	0.0008	<0.0005	0.05	0
Zinc	<0.0005	<0.0005	5.0	0

WATER QUALITY STANDARDS – PESTICIDES

Once per year the Plant is required to have the treated water analyzed for the following pesticides. Those noted on the permit are indicated below; the entire pesticide analysis with an additional 53 analytes not presently regulated components are available upon request. Fourteen of the parameters listed below have an established MAC. Three parameters have no MAC but are required by our regulatory permits to be monitored.

Parameter (mg/l)	Feb. 26	MAC	Number of Samples Exceeding Limit
Atrazine	<0.000005	0.005	0
Bromoxynil	<0.000005	0.005	0
Carbofuran	<0.0002	0.09	0
Chlorpyrifos	<0.000005	0.09	0
Dicamba	<0.000005	0.12	0
Dichlorprop 2-4DP	<0.000005	N/A	0
Diclofop-methyl	<0.00002	0.009	0
Dimethoate	<0.00005	0.02	0
Ethalfluralin	<0.000005	N/A	0
Glyphosate	<0.0001	0.28	0
Malathion	<0.00005	0.19	0
MCPA	<0.000005	0.10	0
Pentachlorophenol	<0.0001	0.06	0
Picloram	<0.000005	0.19	0
Triallate	<0.000005	N/A	0
Dichlorophenoxyacetic Acid 2,4 (2,4-D)	0.000005	0.1	0
Trifluralin	<0.000005	0.045	0

WATER QUALITY STANDARDS – DISINFECTION BY-PRODUCT – TRIHALOMETHANES

As part of the Plant's "Permit to Operate" an analysis for Trihalomethanes is required once per month from the treated water. The MAC is 0.1 milligrams per litre, or, 100 micrograms per litre (parts per billion) for total trihalomethanes on an annual average. The annual average of 65 micrograms per litre is well below the MAC.

Parameter (ug/l)	Jan. 6	Feb. 3	Mar. 10	Apr. 7	May 12	Jun. 2
Chloroform	29	28	28	40	100	2
Bromodichloromethane	13	14	13	14	10	<1
Dibromochloromethane	4	5	4	4	<1	<1
Bromoform	<1	<1	<1	<1	<1	<1
Total Trihalomethanes	46	46	45	58	110	2
	Jul. 2	Aug. 5	Sep. 2	Oct. 6	Nov. 3	Dec. 1
Chloroform	42	86	76	58	48	46
Bromodichloromethane	<1	12	19	20	22	25
Dibromochloromethane	<1	1	2	3	4	6
Bromoform	<1	<1	<1	<1	<1	<1
Total Trihalomethanes	42	99	97	81	74	76

WATER QUALITY STANDARDS – DISINFECTION BY-PRODUCT – HALOACETIC ACIDS (HAA5'S)

The Plant is obligated to sample for Haloacetic Acids every three months. The annual average of quarterly samples (31 ug/L) was well below the MAC which is based on an average of four samples. The results are as follows:

Parameter (ug/l)	Jan. 13	Apr. 8	Jul. 8	Oct. 14	Annual Average	MAC (Average)
HAA5	36	49	<5	7	31	80

WATER QUALITY STANDARDS – CYANIDE AND MERCURY

The Plant is required to submit two (2) samples per year for analysis for Cyanide and Mercury.

Parameter (mg/l)	May 07	Nov. 24	MAC	Number of Samples Exceeding Limit
Cyanide	<0.001	<0.001	0.2	0
Mercury	<0.00001	<0.00001	0.001	0

WATER QUALITY STANDARDS – ORGANICS PLUS MICROCYSTIN

The Plant is required to submit one (1) sample per year for analysis for various organics including Microcystin. Those noted on the permit are indicated below; the entire organic analysis is noted in the Appendix.

Parameter (mg/l)	Feb. 26	MAC	Number of Samples Exceeding Limit
Benzene	<0.0001	0.005	0
Benzo(a)pyrene	<0.00001	0.00001	0
Carbon Tetrachloride	<0.0001	0.005	0
Dichlorobenzene 1,2	<0.0001	0.2	0
Dichlorobenzene 1,4	<0.0001	0.005	0
Dichoroethane 1,2	<0.0001	0.005	0
Dichloroethylene 1,1	<0.0003	0.014	0
Dichloromethane	<0.004	0.05	0
Dichlorophenol 2,4	<0.0001	0.9	0
Ethylbenzene	<0.0001	0.0024	0
Monochlorobenzene	<0.0001	0.08	0
Toluene	<0.0001	0.024	0
Tetrachlorophenol 2,3,4,6	<0.0001	0.1	0
Trichloroethylene	<0.0001	0.05	0
Trichlorophenol 2,4,6	<0.0001	0.005	0
Vinyl Chloride	<0.0002	0.002	0
Xylenes	<0.0001	0.300	0
Microcystin	<0.0005 (Jul. 8)	0.0015	0

2014 - BUFFALO POUND WATER QUALITY DATA
RAW LAKE WATER

PAGE 1

Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
PHYSICAL																
Colour (Apparent)	Pt/Co	18	20	15	40	48	38	50	48	38	18	25	10	32	10	60
Conductivity	µS/cm	758	795	811	726	431	469	584	694	757	854	960	1051	692	416	1051
Bench Diss. Oxygen	mg/L	7.0	6.4	6.5	9.5	9.7	8.5	8.0	7.3	8.8	10.1	13.1	10.5	8.4	5.0	13.1
Bench Diss. Oxygen	%	52.9	47.9	49.1	59.1	85.5	87.2	89.3	82.8	87.5	87.3	95.2	77.0	74.8	0.0	101.2
ON-LINE Diss. Oxygen	%	60.5	42.0	45.5	97.6	97.3	95.5	103.9	74.3	94.0	96.8	101.5	103.0	84.8	33.0	135.0
Odour	T.O.N.	28	30	35	84	65	93	206	144	45	37	22	19	68	16	250
pH	pH units	7.89	7.77	7.72	8.05	8.29	8.49	8.78	8.46	8.51	8.55	8.50	8.38	8.29	7.61	9.10
Temperature	° C	3.2	3.4	3.6	4.7	9.6	16.7	20.8	21.3	15.4	8.9	2.6	2.9	9.4	1.1	22.9
Turbidity	NTU	1.3	1.5	1.4	5.2	6.4	5.7	8.8	6.0	4.7	3.1	1.7	1.1	3.9	0.7	14.1
TDS	mg/L	506	522	547	443	273	307	423	475	511	562	648	706	477	272	706
TDS	mg/L(calc)	625	665	666	565	338	373	472	554	601	676	753	834	575	326	834
Langelier Index (RTW)	pH units (calc)	-0.34	-0.39	-0.36	0.01	0.12	0.42	0.66	0.29	0.50	0.43	0.24	0.16	0.14	-0.47	1.06
MAJOR CONSTITUENTS																
Alkalinity(p)	mg/L CaCO3	<DL	<DL	<DL	1	2	2	9	<DL	2	3	2	<DL	2	<DL	12
Alkalinity(total)	mg/L CaCO3	201	216	225	221	121	134	142	155	169	189	208	230	174	117	234
Bicarbonate	mg/L	245	263	274	265	143	160	156	189	200	223	250	280	208	134	285
Carbonate	mg/L	<DL	<DL	<DL	2	3	2	11	<DL	2	3	2	<DL	2	<DL	15
Calcium	mg/L	54	58	61	58	34	40	42	47	50	55	56	64	51	33	64
Magnesium	mg/L	29	30	31	25	15	16	21	24	25	29	32	35	25	14	35
Hardness (total)	mg/L CaCO3	248	266	273	248	143	159	190	211	232	257	277	309	229	136	309
Sodium	mg/L	74	78	76	57	34	38	58	71	81	93	108	116	70	32	116
Potassium	mg/L	6.8	7.1	6.7	6.1	7.1	7.2	8.8	9.5	9.8	10.4	11.0	12.0	8.3	5.4	12.0
Sulphate	mg/L	189	200	191	143	88	98	156	188	206	236	257	289	179	83	289
Chloride	mg/L	21.0	22.4	21.4	16.0	9.9	10.9	17.0	20.5	22.0	25.0	31.0	34.5	19.9	9.5	34.5
TRACE CONSTITUENTS																
Aluminum (dissolved 0.45µ)	ug/L	13	<DL	<DL	15	98	176	87	46	48	127	89	66	74	<DL	242
Aluminum (Total)	ug/L	26	12	10	720	440	392	554	170	318	309	196	105	293	10	1845
Ammonia N	mg/L N	0.21	0.12	0.11	0.14	0.12	0.14	0.13	0.20	0.12	0.11		0.17	0.14	<DL	0.30
BOD (5-day)	mg/L	2.5	1.7	2.6		3.7	3.1	5.2	3.3	3.7	2.4	2.4	3.5	3.2	1.6	6.1
Bromide	mg/L	<DL	0.06	0.06	<DL	0.08	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.11
Chlorophyll a	µg/L	7	17	19	9	21	18	61	40	21	17	13	8	24	4	80
Fluoride	mg/L	0.20	0.21	0.21	0.20	0.11	0.14	0.16	0.15	0.16	0.17	0.17	0.18	0.17	0.11	0.21
Iron (dissolved)	mg/L	<DL	<DL	<DL	<DL	0.04	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.06
Manganese (dissolved)	mg/L	0.07	0.17	0.11	0.10	0.04	<DL	<DL	<DL	0.01	<DL	<DL	0.01	0.05	<DL	0.21
Nitrate	mg/L	0.08	0.16	0.09	<DL	0.10	<DL	<DL	0.06	0.06	<DL	0.10	0.08	0.07	<DL	0.20
Organic N	mg/L N	0.08	0.67	0.64	0.66	0.71	0.76	1.04	0.92	0.95	0.75	0.79	0.75	0.77	0.57	1.23
Raw TOC	mg/L C (UV)	6.4	6.6	6.7	7.0	8.2	7.8	9.5	9.6	9.6	9.6	9.7	10.1	8.4	6.0	10.7
Raw DOC (GF diss)	mg/L C (UV)	6.3	6.4	6.2	6.4	7.2	6.7	7.7	8.3	8.8	9.2	9.4	9.8	7.7	5.9	10.2
UV absorbance @ 254nm	Abs 10cm	1.071	1.110	1.125	1.335	1.914	1.537	1.774	1.921	1.860	1.860	1.959	2.065	1.627	1.061	2.122
SUVA	L / mg m	1.697	1.748	1.829	2.082	2.676	2.296	2.254	2.288	2.110	2.029	2.078	2.113	2.095	1.627	2.743
PreFM UV abs @ 254nm	Abs 10cm	0.903	0.936	0.965	1.051	1.479	1.168	1.337	1.447	1.463	1.487	1.604	1.669	1.292	0.899	1.701
Phosphate(ortho)	µg/L P	31	29	23	26	25	4	10	39	29	12	41	27	24	<DL	53
Phosphate(total)	µg/L P	57	73	58	82	90	75	107	117	88	53	77	52	80	49	123
Silica (SiO3)	mg/L	6.5	6.8	6.2	4.8	2.8	0.4	2.3	5.9	6.3	2.7	5.1	4.0	4.5	0.2	7.7
Sulphide	µg/L															

Continued...

2014 - BUFFALO POUND WATER QUALITY DATA
RAW LAKE WATER

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Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
TRACE CONSTITUENTS																
PreFM																
TTHM's (total)	µg/L(calc)	35	34	37	54	100	83	108	104	96	77	66	73	72	33	128
Chloroform	µg/L	23	21	26	41	92	71	87	78	66	49	40	43	53	20	102
Bromodichloromethane	µg/L	9	9	9	11	8	12	19	21	24	22	20	21	16	5	25
Chlorodibromomethane	µg/L	3	4	3	2	<DL	<DL	2	4	6	7	7	9	4	<DL	10
Bromoform	µg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
BIOLOGICAL																
Blue Green Algae (x10^-3)	per litre	<DL	<DL	111	20	<DL	167	1622	1117	351	128	17	<DL	324	<DL	3311
Green Algae (x10^-3)	per litre	351	920	2194	755	3197	2911	3911	2134	420	156	119	584	1446	44	8933
Diatoms (x10^-3)	per litre	58	67	44	75	778	283	235	78	167	128	117	480	211	<DL	2578
Flagellates (x10^-3)	per litre	233	295	64	316	369	1872	1191	756	931	356	264	165	568	22	4378
Crustaceans	per litre	102	158	101	22	14	1048	57	93	59	48	26	17	136	<3	3400
Nematodes (x10^-3)	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Rotifers (x10^-3)	per litre	<DL	<DL	17	<DL	<DL	<DL	22	22	<DL	<DL	<DL	<DL	<DL	<DL	67
Other (x10^-3)	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Total Green & B-G	per litre	351	920	2305	775	3211	3078	5533	3250	771	284	136	589	2429	289	1644
BACTERIOLOGICAL																
Total Coliforms	per 100 ml	<DL	<DL	<DL	60	<DL	25	1775	3500	1020	100	100	2	589	<DL	5000
Total Coliforms (background)	per 100 ml	36	25	35	515	1038	1638	23025	40750	30440	8275	1520	218	9034	10	67000
Faecal Coliforms	per 100 ml	<DL	<DL	<DL	<DL	<DL	2	2	4	2	2	<DL	<DL	1	<DL	8
Standard Plate Count	per 1 ml	9	8	12	1633	333	150	1058	830	609	142	58	42	432	4	4450
CHEMICAL DOSES																
Alum	mg/L	84	83	84	88	71	71	92	110	102	95	99	118	92	65	120
Alum\Raw DOC	ratio	13.29	12.99	13.63	13.77	9.94	10.63	11.67	13.11	11.57	10.36	10.48	12.07	12.01	9.03	14.29
Alum-DOC Stoich	ratio	1.08	1.05	1.11	1.12	0.81	0.86	0.95	1.06	0.94	0.84	0.85	0.98	0.97	0.73	1.16
Chlorine-pre	mg/L	4.6	3.5	3.9	4.4	6.0	4.8	6.5	7.7	5.6	3.9	3.2	4.0	4.9	3.0	8.4
Chlorine-intermed	mg/L															
Chlorine-post	mg/L	0.6	0.7	0.7	0.6	1.0	1.4	1.5	1.5	1.5	1.5	1.6	1.1	1.1	0.3	1.8
Plant Flow	MLD	90.4	96.5	113.8	101.2	104.0	101.0	115.4	107.8	94.4	93.3	96.5	91.8	100.3	69.0	146.0
Qu'Appelle Dam Flow	cu m/s	1.7	1.7	1.8	0.8	0.0	0.0	0.7	1.5	0.0	4.1	1.2	1.3	1.2	0.0	8.0
Fluoride (Set Point for MJ)	mg/L	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65				0.65	0.65	0.65
Powdered Carbon	mg/L															
CPAC Train A	mg/L															
CPAC Train B	mg/L															
Total Chlorine dose	mg/L (Calc)	5.2	4.2	4.6	5.0	7.0	6.3	8.0	9.2	7.1	5.4	4.8	5.1	6.0	3.8	9.8
Date GAC's ON														15-May		
Date GAC's OFF														09-Dec		
Date Ice ON Lake														12-Nov		
Date Ice OFF Lake														05-May		
Date PAC ON																
Date PAC OFF																
Chlorine Residuals Exit Plant (week avg.)																
Free Chlorine	mg/L	1.09	1.11	1.08	1.09	1.08	1.07	1.08	1.09	1.09	1.10	1.09	1.07	1.09	1.00	1.15
Combined Chlorine	mg/L	0.42	0.42	0.39	0.40	0.20	0.13	0.18	0.20	0.22	0.27	0.32	0.47	0.30	0.07	0.54

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TREATED WATER
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Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
PHYSICAL																
Colour (Apparent)	Pt/Co	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Conductivity	µS/cm	766	805	829	743	445	484	615	704	766	853	984	1081	756	445	1081
Diss. Oxygen	mg/L	12.1	11.9	11.9	12.1	11.2	8.7	8.2	8.0	9.1	10.7	14.9	12.7	11.5	8.0	14.9
% Sat. Diss. Oxygen	%	91.8	89.5	89.8	94.2	93.2	91.2	92.3	93.2	96.9	95.3	104.9	93.1	93.8	89.5	104.9
Odour(Dechlorinated)	T.O.N.	7	7	7	7	5	<1	<1	<1	1	2	2	4	4	<1	11
PreGAC Odour	T.O.N.					14	19	52	53	24	13	8	8	27	7	70
Odour Removal by Coagulation and Filtration	%	74.1%	76.3%	79.9%	89.0%	80.4%	78.6%	74.6%	55.7%	47.9%	63.4%	62.8%	67.3%	70.9%	14.9%	94.5%
Odour Removal Overall	%	74.1%	76.3%	79.9%	89.0%	90.7%	100.0%	99.9%	100.0%	96.9%	94.2%	89.6%	78.5%	88.3%	65.2%	100.0%
PreFM pH	pH units	7.58	7.58	7.48	7.73	7.77	7.80	8.17	7.69	7.98	8.17	8.20	8.05	7.86	7.27	8.60
Coagulation pH - Channel 1	pH units	6.98	7.05	7.19	7.04	6.84	6.97	6.87	6.74	6.87	6.98	7.41	7.42	7.02	6.65	7.48
Coagulation pH - Channel 2	pH units	7.02	7.08	7.12	7.06	6.86	6.99	6.93	6.76	6.88	6.98	7.60	7.00	6.97	6.66	7.35
Clearwell pH	pH units	7.17	7.23	7.15	7.22	7.04	7.25	7.17	7.07	7.18	7.22	7.33	7.38	7.20	6.81	7.45
Temperature	°C	3.7	3.6	3.5	4.5	9.7	17.3	21.0	22.0	16.2	9.6	2.6	2.9	9.7	1.0	23.7
Turbidity	NTU	0.09	0.10	0.09	0.08	0.09	0.09	0.09	0.08	0.08	0.08	0.07	0.08	0.08	0.06	0.11
Total Dissolved Solids	mg/L	520	540	556	466	282	308	412	474	508	562	644	706	498	282	706
Total Dissolved Solids	mg/L(calc)	613	651	661	592	325	357	447	510	569	652	737	817	578	325	817
Turbidity Log Removal	(calc)	1.15	1.19	1.20	1.66	1.83	1.81	1.97	1.85	1.77	1.56	1.36	1.09	1.54	0.93	2.25
Langelier Index (RTW)	pH units (calc)	-0.99	-0.89	-0.97	-0.90	-1.22	-0.92	-0.99	-1.07	-0.94	-0.92	-1.00	-0.83	-0.97	-1.43	-0.73
MAJOR CONSTITUENTS																
Alkalinity(p)	mg/L CaCO3	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Alkalinity(total)	mg/L CaCO3	157	171	184	169	83	91	87	93	109	134	170	189	136	81	194
Bicarbonate	mg/L	191	209	224	206	101	111	106	113	132	164	207	231	166	99	237
Carbonate	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Calcium	mg/L	53	57	58	61	34	38	40	43	47	53	55	62	50	34	62
Magnesium	mg/L	29	30	31	27	14	16	20	23	24	28	32	35	26	14	35
Hardness (total)	mg/L CaCO3	251	269	269	264	140	153	181	197	222	251	272	305	231	140	305
Sodium	mg/L	75	79	78	61	33	37	55	66	79	90	107	116	73	33	116
Potassium	mg/L	6.8	7.2	7.0	5.9	7.1	7.1	8.5	9.3	9.7	10.4	11.0	12.0	8.5	5.9	12.0
Sulphate	mg/L	231	237	218	197	118	135	189	232	248	281	283	313	223	118	313
Chloride	mg/L	25.9	26.2	32.8	21.3	15.6	15.6	23.5	26.8	27.7	29.9	43.8	50.9	28.3	15.6	50.9
TRACE CONSTITUENTS																
CLEAR WELL																
Aluminum (dissolved 0.45µ)	µg/L Chart	46	44	40	36	24	10	16	12	11	16		21	25	10	46
Aluminum (total)	µg/L Chart	78	76	66	47	45	8	16	12	10	17		23	36	8	78
Aluminum (total 12 mo avg)	µg/L	57	51	49	50	51	51	50	50	50	50		36			
Aluminum (particulate)	µg/L (Calc)	32	32	26	11	21	<DL	<DL	<DL	<DL	<DL		<DL	11	<DL	32
Mixed Media Filter A																
Aluminum (total)	µg/L	34	62		39	56	32	40	37	50	84		51	48	32	84
Mixed Media Filter L																
Aluminum (total)	µg/L	26	49		33	31	33	45	46	58	52		39	40	26	58
PREGAC																
Aluminum (dissolved)	µg/L						22	36	21	28	21		37	28	21	37
Aluminum (total)	µg/L Chart						28	43	35	55	63		53	46	28	63
Ammonia N	mg/L N	<DL	0.05	<DL	<DL	<DL	<DL	<DL	<DL	0.04	<DL	<DL	0.23	<DL	<DL	0.23
Bromide	mg/L	<DL	<DL	<DL	<DL	<DL	0.12	<DL	<DL	<DL	0.08	<DL	0.26	<DL	<DL	0.26
Fluoride	mg/L	0.11	0.12	0.15	0.12	0.08	0.07	0.08	0.07	0.07	0.09	0.09	0.02	0.08	0.00	0.15
Fluoride (MJ dose by ISE)	mg/L (wk avg)	0.63	0.63	0.81	0.73	0.74	0.76	0.85	0.64	0.59				0.71	0.51	0.91
Iron (dissolved)	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Iron (total)	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Manganese (dissolved)	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Manganese (total)	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Nitrate	mg/L N	0.06	0.12	0.07	<DL	0.21	<DL	0.06	0.11	0.20	<DL	0.10	0.08	0.09	<DL	0.21
Organic N	mg/L N	0.35	0.54	0.37	0.26	0.23	0.07	0.16	0.21	0.26	0.30	0.34	0.39	0.31	0.07	0.71
CW TOC	mg/L C	4.4	4.5	4.6	4.5	2.3	0.7	1.6	2.8	3.7	4.4	5.4	6.4	3.9	0.5	7.0
CW DOC (GF diss)	mg/L C	4.3	4.6	4.6	4.5	2.3	0.8	1.6	2.8	3.7	4.5	5.4	6.5	3.9	0.4	7.1
PreGAC DOC (GF diss)	mg/L C					4.3	4.1	4.6	5.0	5.5	6.0	6.5	6.8	5.3	3.9	6.8
DOC Removal by Coagulation & Filtration	% Removal	31.3%	28.3%	25.6%	29.2%	41.5%	38.4%	39.6%	40.3%	37.4%	34.3%	31.3%	30.0%	33.9%	23.3%	48.6%
DOC Removal by GAC Filtration	% Removal					89.5%	81.5%	65.2%	44.4%	32.9%	25.7%	16.7%	14.1%	44.3%	13.4%	90.9%
Total DOC (% Removal)	% Removal	31.3%	28.3%	25.6%	29.2%	69.0%	88.5%	79.0%	66.8%	58.0%	51.2%	42.7%	34.0%	49.5%	23.3%	94.4%
CW Organic Carbon (diss @ 254nm)	Abs 10cm	0.565	0.605	0.614	0.634	0.333	0.036	0.140	0.262	0.354	0.474	0.631	0.896	0.467	0.022	1.031
PreGAC Organic Carbon (diss @ 254nm)	Abs 10cm					0.645	0.591	0.657	0.738	0.781	0.851	0.933	1.010	0.765	0.563	1.018
Conventional SUVA	L / mg m	1.302	1.329	1.343	1.405	1.546	1.432	1.403	1.453	1.415	1.412	1.480	1.469	1.411	1.254	1.638
CW SUVA	L / mg m	1.302	1.329	1.343	1.405	1.049	0.464	0.690	0.894	0.953	1.058	1.165	1.380	1.092	0.433	1.638
Phosphate(ortho)	µg/L P	<DL	<DL	<DL	<DL	<DL	13	6	7	8	<DL	<DL	<DL	3	<DL	13
Phosphate(total)	µg/L P	7	7	6	5	5	16	14	10	11	6	5	6	8	5	16
Silica (SiO3)	mg/L	6.0	7.0	6.9	4.2	4.4	0.3	1.4	4.4	6.3	2.9	4.7	3.8	4.4	0.3	7.0
Sulphide	µg/L															

Continued...

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TREATED WATER
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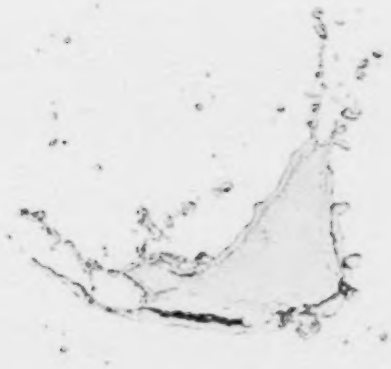
Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
TRACE CONSTITUENTS																
CLEARWELL																
TTHM's (total)	µg/L(calc)	43	43	47	62	68	6	72	100	93	80	73	86	65	1	110
Chloroform	µg/L	27	25	30	46	46	6	69	84	68	55	47	50	47	<DL	100
Bromodichloromethane	µg/L	12	13	13	14	5	<DL	3	15	21	21	22	27	14	<DL	29
Chlorodibromomethane	µg/L	4	5	4	3	<DL	DL	<DL	1	3	3	5	9	3	<DL	12
Bromoform	µg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
CHANNEL																
TTHM's (total)	µg/L(calc)	39	37	40	57	99	79	115	109	96	80	71	86	76	37	115
Chloroform	µg/L	24	22	25	43	91	66	92	80	63	49	42	49	54	22	92
Bromodichloromethane	µg/L	11	11	11	12	8	13	21	25	27	24	21	26	18	8	27
Chlorodibromomethane	µg/L	4	4	4	2	<DL	<DL	2	4	6	7	8	11	4	<DL	11
Bromoform	µg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
PreGAC																
TTHM's (total)	µg/L(calc)					100	82	95	100	96	82	71	81	88	69	110
Chloroform	µg/L					89	69	75	72	65	50	42	46	63	40	91
Bromodichloromethane	µg/L					12	13	18	24	25	24	22	25	21	11	26
Chlorodibromomethane	µg/L					<DL	<DL	2	5	6	8	8	11	5	<DL	11
Bromoform	µg/L					<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
BIOLOGICAL																
Blue Green Algae	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL		<DL	<DL	<DL	<DL
Green Algae	per litre	<DL	<DL	<DL	11111	<DL	<DL	<DL	<DL	<DL	<DL		<DL	1010	<DL	11111
Diatoms	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL		<DL	<DL	<DL	<DL
Flagellates	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL		<DL	<DL	<DL	<DL
Crustaceans	per litre	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	<2	<2	<2
Nematodes	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL		<DL	<DL	<DL	<DL
Rotifers	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL		<DL	<DL	<DL	<DL
Other	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL		<DL	<DL	<DL	<DL
BACTERIOLOGICAL																
Total Coliforms	per 100 ml	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Total Coliforms (background	per 100 ml	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Faecal Coliforms	per 100 ml															
Standard Plate Count	per 1 mL	<DL	<DL	<DL	<DL	<DL	<DL	12.0	2.8	5.4	2.8	0.5	<DL	2.2	<DL	42.0

APPENDIX 2



Financial Statements - 2014

BUFFALO POUND WATER ADMINISTRATION BOARD
DECEMBER 31, 2014

INDEPENDENT AUDITOR'S REPORT

To the Chairman and Members of the Buffalo Pound Water Administration Board

We have audited the accompanying financial statements of the Buffalo Pound Water Administration Board, which comprise the statement of financial position at December 31, 2014, and the statements of operations, reserve for replacement of capital assets, change in net financial assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Buffalo Pound Water Administration Board as at December 31, 2014, and the results of its operations, change in its net financial assets and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Chartered Professional Accountants

May 01, 2015
Regina, Saskatchewan

Buffalo Pound Water Administration Board
STATEMENT OF FINANCIAL POSITION
[in dollars]

As at December 31

	2014	2013
FINANCIAL ASSETS		
Cash	**3,319,210**	3,225,668
Accounts receivable		
City of Regina	**642,483**	662,761
City of Moose Jaw	**236,506**	251,300
Other	**186,468**	166,175
Deficit receivable (Note 1)		
City of Regina	**222,944**	-
City of Moose Jaw	**42,118**	-
Total financial assets	**4,649,729**	4,305,904
FINANCIAL LIABILITIES		
Accounts payable and accrued liabilities	**377,056**	216,061
20% Refundable rate (Note 2)		
City of Regina	**1,134,899**	1,169,942
City of Moose Jaw	**397,713**	412,130
Surplus refundable (Note 1)		
City of Regina	**-**	15,995
City of Moose Jaw	**-**	3,101
Employee benefit obligations (Note 4)	**486,680**	442,784
Total financial liabilities	**2,396,348**	2,260,013
Net financial assets	**2,253,381**	2,045,891
NON-FINANCIAL ASSETS		
Inventory of chemicals	**132,954**	85,342
Prepaid expenses	**-**	12,642
Tangible capital assets (Note 5)	**22,077,890**	23,094,069
Accumulated surplus (Note 7)	**24,464,225**	25,237,944

See accompanying notes.

SIGNED ON BEHALF OF THE BOARD

Board Member

Board Member

Buffalo Pound Water Administration Board

STATEMENT OF OPERATIONS

[in dollars]

For the year ended December 31

	Budget (unaudited)	2014	2013
REVENUES			
General water rate charges			
City of Regina operating contributions	6,700,925	**6,445,138**	6,625,680
City of Moose Jaw operating contributions	1,408,330	**1,217,924**	1,284,680
City of Regina capital contributions	670,093	**644,514**	662,568
City of Moose Jaw capital contributions	140,833	**121,792**	128,468
	8,920,181	**8,429,368**	8,701,396
Refundable water rate	1,621,851	**1,532,612**	1,582,072
Power charges	299,237	**254,979**	277,729
Miscellaneous water sales	105,000	**113,189**	112,552
Interest	15,000	**43,124**	37,430
Other	4,000	**9,357**	5,790
	10,965,269	**10,382,629**	10,716,969
EXPENSES			
Employee wages and benefits (Schedule 2)	3,233,800	**3,134,582**	2,923,329
Amortization of tangible capital assets (Schedule 3)	1,727,399	**1,727,399**	1,717,733
Utilities (Schedule 2)	1,692,000	**1,706,260**	1,844,845
Chemicals (Schedule 2)	1,970,000	**1,880,680**	2,001,526
Refundable water rate	1,621,851	**1,532,612**	1,582,072
Security upgrades	-	**-**	10,960
Equipment maintenance (Schedule 2)	669,300	**534,931**	543,435
Miscellaneous (Schedule 2)	260,100	**206,238**	391,068
Laboratory supplies and maintenance (Schedule 2)	178,000	**182,671**	156,580
Building and ground maintenance (Schedule 2)	405,600	**348,465**	104,553
Administration (Schedule 2)	127,000	**167,572**	163,301
	11,885,050	**11,421,410**	11,439,402
Deficiency of revenues over expenses before refundable surplus	(919,781)	**(1,038,781)**	(722,433)
Deficit owing (surplus refundable) from operations allocated as follows:			
City of Regina		**222,944**	(15,995)
City of Moose Jaw		**42,118**	(3,101)
Change in accumulated surplus		**(773,719)**	(741,529)
Accumulated surplus, beginning of year		**25,237,944**	25,979,473
Accumulated surplus, end of year		**24,464,225**	25,237,944

See accompanying notes.

Buffalo Pound Water Administration Board

STATEMENT OF RESERVE FOR REPLACEMENT OF CAPITAL ASSETS

[in dollars]

For the year ended December 31

	2014	2013
Balance, beginning of year	**2,586,659**	1,917,686
Contributions (Note 2)		
City of Regina capital contributions	**644,514**	662,568
City of Moose Jaw capital contributions	**121,792**	128,468
Interest earned (Note 3)	**36,396**	28,663
Expenditures from reserve for replacement of capital assets (Schedule 1)	**(516,346)**	(150,726)
Balance, end of year (Note 6)	**2,873,015**	2,586,659

See accompanying notes.

Buffalo Pound Water Administration Board
STATEMENT OF CHANGE IN NET FINANCIAL ASSETS
[in dollars]

For the year ended December 31

	2014	2013
Change in accumulated surplus	(773,719)	(741,529)
Acquisition of tangible capital assets	(715,482)	(439,426)
Amortization of tangible capital assets	1,727,399	1,717,733
Loss on the disposal of tangible capital assets	4,262	148,759
Surplus of capital expenses over expenditures	1,016,179	1,427,066
Acquisition of inventory of chemicals	(1,928,292)	(2,029,721)
Acquisition of prepaid expense	-	(12,642)
Consumption of inventory of chemicals	1,880,680	2,001,526
Use of prepaid expenses	12,642	12,632
Deficit of expenses of other non-financial assets over expenditures	(34,970)	(28,205)
Increase in net financial assets	207,490	657,332
Net financial assets, beginning of year	2,045,891	1,388,559
Net financial assets, end of year	2,253,381	2,045,891

See accompanying notes.

Buffalo Pound Water Administration Board
STATEMENT OF CASH FLOWS
[in dollars]

For the year ended December 31

	2014	2013
OPERATING ACTIVITIES		
Change in accumulated surplus	**(773,719)**	(741,529)
Add back non-cash items		
Amortization of tangible capital assets	**1,727,399**	1,717,733
Loss on disposal of tangible capital assets	**4,262**	148,759
Net change in non-cash working capital balances		
in accounts receivable	**14,779**	120,783
in accounts payable and accrued liabilities	**160,995**	(669,854)
in 20% refundable rate	**(49,460)**	77,981
in surplus refundable	**(284,158)**	156,468
in employee benefits obligations	**43,896**	(16,565)
in inventory of chemicals	**(47,612)**	(28,196)
in prepaid expenses	**12,642**	(10)
Cash provided by operating activities	**809,024**	765,570
CAPITAL ACTIVITIES		
Acquisition of tangible capital assets	**(715,482)**	(439,426)
Increase in cash position	**93,542**	326,144
Cash, beginning of year	**3,225,668**	2,899,524
Cash, end of year	**3,319,210**	3,225,668

See accompanying notes.

Buffalo Pound Water Administration Board

NOTES TO THE FINANCIAL STATEMENTS

[in dollars]

For the year ended December 31, 2014

1. BASIS OF OPERATIONS

The Buffalo Pound Water Administration Board (the Board) was formed under a 1951 agreement, amended in 1991, between the cities of Moose Jaw and Regina for the purpose of operating the water treatment facility at Buffalo Pound Lake to provide a water supply to the two cities at cost (the Agreement). Any surplus (deficit) in a particular fiscal year is distributed to (charged to) the cities according to their respective usage.

2. SIGNIFICANT ACCOUNTING POLICIES

The financial statements of the Board are the representation of management and have been prepared in accordance with Canadian public sector accounting standards, as recommended by the Chartered Professional Accountants of Canada (CPA Canada). Significant aspects of the accounting policies adopted by the Board are as follows:

Use of estimates

The preparation of financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and use assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the year. Actual results could differ from those estimates.

Employee benefit obligations

Employee benefit obligations relating to severance or retirement benefits are recognized to the extent that they are vested and could be taken in cash by an employee on termination.

Pension benefit obligations

The Board is one of the sponsors of a multi-employer defined benefit pension plan. The Board follows defined contribution accounting under which pension expense is limited to the Board's contributions to the plan.

Inventory of chemicals

Inventory of chemicals are valued at the lower of net realizable value and average cost.

Capital contributions

The funding for capital assets is through one of two means, from the Reserve for Replacement of Capital Assets or through a separate funding agreement between the cities of Moose Jaw and Regina (the cities).

Article 3 of the Agreement between the cities requires an additional contribution from each city equal to 10% of the general water rate for every mega litre of water sold. This contribution funds the Reserve for Replacement of Capital Assets from which capital assets may be funded. For major capital projects that the reserve is unable to fund, a separate agreement between the two cities may be struck in order to provide funding for the project. Contributions from the cities under Article 3 of the Agreement or through a separate agreement are shown as capital contributions for financial statement purposes.

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2014

2. SIGNIFICANT ACCOUNTING POLICIES (Continued)

Operating contributions

Under the terms of the Agreement, each city pays the Board for water and electricity used based upon the following rates established by the Board:

	2014	2013
General water rate, per mega litre	**227.15**	225.02
Electricity rate, per kilowatt hour	**0.08382**	0.07908

These revenues are recognized as the water is delivered to the cities' water distribution systems. Other revenues are recognized when earned and measurable.

Refundable water rate

Under Article 5 of the Agreement, the Board receives an additional 20% of the general water rate from the cities for every mega litre of water sold. At each fiscal year end, the proceeds of these payments are refunded in proportion to the cities' respective capital investment in the Board.

Financial instruments

The fair value of cash, accounts receivable, accounts payable and accrued liabilities, the 20% refundable rate and the surplus refundable/ deficit owing approximates the carrying value given their short term nature.

Tangible capital assets

Tangible capital assets are recorded at cost which includes all amounts that are directly attributable to acquisition, construction, development or betterment of the asset. The cost, less residual value, of the tangible capital assets are amortized on a straight-line basis over their estimated useful lives as follows:

General	
Land improvements	20 years
Vehicles and equipment	6 to 20 years
Office and information technology	10 to15 years
Infrastructure	
Plants and facilities	5 to 40 years
Roads	25 years

Assets under construction are not amortized until the asset is available for productive use.

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt and also are recorded as revenue.

Leases are classified as capital or operating leases. Leases which transfer substantially all of the benefits and risks incidental to ownership of property are accounted for as capital leases and recorded as tangible capital assets. All other leases are accounted for as operating leases and the related lease payments are charged to expenses as incurred.

Credit Risk

Credit risk is the risk of financial loss to the Board if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Board's credit risk is primarily attributable to accounts receivable. This risk is limited as accounts receivable is due mainly from the City of Regina and the City of Moose Jaw.

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2014

Liquidity Risk

Liquidity risk is the risk that the Board will not be able to meet its financial obligations as they become due. The City of Regina staff on behalf of Buffalo Pound manages liquidity risk by continually monitoring cash flow requirements to ensure that it has sufficient funds to meet obligations when they become due. The Board has an agreement with the City of Regina and the City of Moose Jaw, where each billing cycle Buffalo Pound collects an additional 10% of the billable service cost of water purchase as a contribution to their capital reserve and an additional 20% for working capital funding.

Interest Rate Risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in the market interest rates. The Board is not exposed to significant interest rate risk.

3. RESERVE FOR REPLACEMENT OF CAPITAL ASSETS

The Statement of Reserve for Replacement of Capital Assets shows allocated interest to the Reserve of $36,396 ($28,663 in 2013). This represents the interest earnings for the year and is transferred in accordance with Article 3 of the Agreement. The interest is calculated by applying the prescribed rate, being bank prime less 1.2%, to the average monthly reserve balance to a maximum of the actual interest earned on the funds.

4. EMPLOYEE BENEFIT OBLIGATIONS

The unfunded employee benefit obligations accrued at year end are as follows:

	2014	2013
Vacation pay	**206,498**	177,338
Vested termination payments	**280,182**	265,446
	486,680	442,784

Based upon an agreement with UNIFOR Local 595, termination payments for union employees vest after 15 years of service or upon retiring at the age of 65 after 10 years of continuous service. The amount payable on termination after vesting is 20 hours pay for each completed year of service.

For out-of-scope employees the termination payments vest after 10 years of service. The amount payable on termination after vesting is the wages the employee would have been paid had the employee worked for a time equal to their unused sick days on termination date. The maximum termination payment to an out-of-scope employee is 78 days pay.

Buffalo Pound Water Administration Board is a member of the City of Regina Civic Employees' Superannuation and Benefit Plan (the Plan), which is overseen by its own Administrative Board. All eligible permanent and probation employees of the Board are members of the Plan. This multi-employer Plan provides defined retirement benefits and is integrated with the Canada Pension Plan (CPP). The Plan provides a lifetime monthly pension based on an employee's years of service and the average of the best three consecutive years of earnings. For 2014 employees contributed 9.42% (2013 - 9.42%) of their earnings below the CPP maximum and 13.96% (2013 - 13.96%) of earnings above the CPP maximum and the Board matches employee contributions.

Preliminary financial statement projections as at December 31, 2014 indicate the Plan had a deficit (unfunded liability) of net assets available to pay accrued pension benefits of $70,410,000 (2013 - $117,911,000).

The Plan is a multi-employer defined benefit plan; therefore neither benefits nor contributions are segregated by employer. The Plan managers have been unable to determine the portion of any unfunded liability attributable to each employer. Accordingly, no portion of the deficiency has been recognized as a liability or expense in the financial statements. The Plan has been accounted for using the method appropriate for defined contribution plans and, as such, the amount of pension expense is equal to the contributions required for the year. Penson costs of

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2014

4. EMPLOYEE BENEFIT OBLIGATIONS (Continued)

$270,016 ($251,137 in 2013) based on employer contributions were expensed during 2014.

Buffalo Pound Water Administration Board is a member of the Regina Civic Employees' Long-term Disability Plan (the Disability Plan). Preliminary financial statement projections as of December 31, 2014 indicate a surplus of net assets available for benefits of $24,154,000 (2013 -$21,727,000).

The Disability Plan is a multi-employer plan and consequently, identification of individual employer's assets is not available from the Disability Plan managers. Accordingly, no portion of the surplus has been recognized as an asset or expense reduction in the financial statements. Disability benefits are based on 65% of the member's salary and will be paid either throughout the duration of the disability, until the member elects voluntary early retirement, reaches age 65 or upon death, whichever occurs first. The Disability Plan has been accounted for using the method appropriate for defined contribution plans and, as such, the amount of benefit expense is equal to the contributions required for the year. Member contributions are made to the Plan at a rate of 0.92%, with the employer matching contributions. The Board recorded disability premium costs for 2014 of $21,422 ($19,973 in 2013).

Dental and medical plans are also provided for most employees and are paid for by the Board.

5. TANGIBLE CAPITAL ASSETS

	NET BOOK VALUE	
	2014	2013
General		
Vehicles and equipment	**333,449**	322,535
Office and information technology	**41,149**	23,601
Infrastructure		
Plants and facilities	**21,643,463**	22,724,085
Assets under construction	**59,829**	23,848
	22,077,890	23,094,069

For additional information, see the Schedule of Tangible Capital Assets (Schedule 3). During the year there were no write-downs of assets (2013-$nil). In addition, there were no assets contributed to the Board (2013-$nil).

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2014

6. CAPITAL INVESTMENT IN ASSETS/CAPITAL PROJECTS

The Capital Investment represents the contributions made by each of the cities under Article 3 of the Agreement, as well as those made under separate agreement, which have been used for capital purposes. Each City's investment is proportionate to the amount contributed. For additional information, see Capital Investment (Schedule 1).

Capital Investment

	2014			2013
	Regina	Moose Jaw	Total	Total
Balance - beginning of year	56,377,162	21,181,054	77,558,216	77,407,490
Additions funded by:				
Reserve for replacement of capital assets	382,354	133,992	516,346	150,726
Balance - end of year	56,759,516	21,315,046	78,074,562	77,558,216

Capital Reserve

	2014			2013
	Regina	Moose Jaw	Total	Total
Balance - beginning of year	2,892,207	(305,548)	2,586,659	1,917,686
Capital reserve beginning of year	2,892,207	(305,548)	2,586,659	1,917,686
2014 10% Capital contributions	644,514	121,792	766,306	791,036
Interest allocation	26,951	9,445	36,396	28,663
Capital purchase	(382,354)	(133,992)	(516,346)	(150,726)
Balance - end of year	3,181,318	(308,303)	2,873,015	2,586,659

Total Capital Investment

	2014			2013
	Regina	Moose Jaw	Total	Total
Balance - beginning of year	59,269,369	20,875,506	80,144,875	79,325,176
Percentage allocation 2013	73.95	26.05	100	-
Balance - end of year	59,940,834	21,006,743	80,947,577	80,144,875
Percentage allocation 2014	74.05	25.95	100	

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2014

7. ACCUMULATED SURPLUS

Accumulated surplus represents the equity of an organization. In determining accumulated surplus, revenues and expenses are recognized as they are earned and incurred, according to Canadian public sector accounting standards as recommended by CPA Canada.

	2014	2013
Investment in tangible capital assets	**22,077,890**	23,094,069
Reserve for replacement of capital assets	**2,873,015**	2,586,659
Employee benefit obligations (Note 4)	**(486,680)**	(442,784)
Accumulated surplus	**24,464,225**	25,237,944

Buffalo Pound Water Administration Board **Schedule 1**

CAPITAL INVESTMENT

[in dollars]

For the year ended December 31

	2014	2013
Balance - beginning of year	**77,558,216**	77,407,490
Additions financed by reserve for replacement of capital assets		
Contactor flowmeters	-	9,496
Screw pump	**130,956**	-
LPS pump	**83,561**	-
Filter valve replacement	-	3,916
Security upgrades	**8,373**	10,960
Portable generator	-	69,141
Alum tank liner	**124,939**	57,213
DOC analyser	**39,354**	-
Vulnerabilities assessment	**(3,737)**	-
Pumpwell slab	**12,412**	-
Carbon regen plant roof	**68,925**	-
Backwash tank	**36,367**	-
Office furniture	**15,196**	-
	516,346	150,726
Balance - end of year	**78,074,562**	77,558,216

Buffalo Pound Water Administration Board **Schedule 2**

SCHEDULE OF EXPENDITURES

[in dollars]

For the year ended December 31

	Budget (unaudited)	2014	2013
EMPLOYEE WAGES AND BENEFITS (SCHEDULE 2)			
Wages - permanent employees	2,540,000	**2,465,532**	2,344,369
Employee benefits - permanent employees	509,800	**472,048**	434,286
Overtime wages - permanent employees	122,600	**102,643**	103,094
WCB premiums	29,700	**21,162**	20,931
Premium pay - permanent employees	14,800	**14,243**	15,254
Car allowance	7,900	**10,219**	8,123
Clothing and boot allowance	4,000	**2,311**	3,675
Employee benefits - vacation, sick and termination	-	**43,896**	(16,565)
Employee awards and gifts	5,000	**2,528**	10,162
	3,233,800	**3,134,582**	2,923,329
UTILITIES (SCHEDULE 2)			
Electricity	1,452,000	**1,438,647**	1,404,152
Natural gas	240,000	**267,613**	440,693
	1,692,000	**1,706,260**	1,844,845
CHEMICALS (SCHEDULE 2)			
Alum	1,485,000	**1,587,033**	1,669,168
Granular activated carbon	228,000	**126,401**	162,895
Chlorine	156,000	**134,484**	138,953
Powder activated carbon	101,000	**32,762**	30,510
	1,970,000	**1,880,680**	2,001,526
EQUIPMENT MAINTENANCE (SCHEDULE 2)			
Filtration plant	250,000	**176,950**	184,294
Wastewater system	61,200	**86,468**	129,421
Regeneration plant	142,800	**119,198**	94,901
Pump station	45,900	**13,066**	46,779
Computer and communications	80,800	**86,047**	49,628
High power electrical	78,400	**26,156**	23,233
Pipeline	10,200	**27,046**	15,179
	669,300	**534,931**	543,435

Buffalo Pound Water Administration Board
Schedule 2

SCHEDULE OF EXPENDITURES (CONTINUED)

[in dollars]

For the year ended December 31

	Budget (unaudited)	2014	2013
MISCELLANEOUS (SCHEDULE 2)			
Insurance	65,000	**60,963**	66,252
General supplies	28,000	**5,526**	12,733
Telephone	16,000	**16,384**	15,033
Professional and membership fees	24,000	**10,404**	21,778
Travel and conventions	23,000	**11,411**	23,504
Maintenance - vehicles	42,500	**26,207**	27,115
Stationary and office supplies	21,600	**23,867**	21,834
Advertising	11,000	**12,255**	719
Education and training	18,000	**28,944**	13,012
Contracted services	10,000	**5,999**	47,966
Livingston audit credit	-	**-**	(7,960)
Software maintenance	1,000	**-**	447
Tangible capital asset (gain)/loss	-	**4,262**	148,759
Foreign exchange (gain)/loss	-	**16**	(124)
	260,100	**206,238**	391,068
LABORATORY SUPPLIES AND MAINTENANCE (SCHEDULE 2)			
Laboratory supplies	70,000	**81,968**	71,233
Accreditation program and research	56,000	**57,057**	48,046
Laboratory equipment	42,000	**37,024**	29,683
Contract analytical	10,000	**6,622**	7,618
	178,000	**182,671**	156,580
BUILDING AND GROUND MAINTENANCE (SCHEDULE 2)			
Filtration plant	377,500	**323,738**	92,818
Regeneration plant	12,800	**14,746**	9,109
Lake pump station	15,300	**9,981**	2,626
	405,600	**348,465**	104,553
ADMINISTRATION (SCHEDULE 2)			
City of Regina administration	32,000	**34,109**	32,600
Board expenses	80,000	**119,608**	117,681
Audit services	15,000	**13,855**	13,020
	127,000	**167,572**	163,301

Buffalo Pound Water Administration Board **Schedule 3**

SCHEDULE OF TANGIBLE CAPITAL ASSETS

[in dollars]

For the year ended December 31

	General			Infrastructure				
	Land Improvements	Vehicles and Equipment	Office and Information Technology	Plants and Facilities	Roads	Assets Under Construction	2014	2013
Cost								
Beginning of year	11,373	1,007,694	31,066	77,721,986	2,321	23,848	**78,798,288**	78,673,464
Add:								
Additions during year	-	61,729	21,515	596,257		35,981	**715,482**	439,426
Transfers from assets under construction	-	-	-	-		-	-	-
Less:								
Disposals during year	-	52,843	-	5,400	-	-	**58,243**	314,602
End of year	11,373	1,016,580	52,581	78,312,843	2,321	59,829	**79,455,527**	78,798,288
Accumulated amortization								
Beginning of year	11,373	685,159	7,465	54,997,901	2,321	-	**55,704,219**	54,152,328
Add:								
Amortization	-	48,173	3,967	1,675,259	-	-	**1,727,399**	1,717,733
Less:								
Accumulated amortization on disposals	-	50,201	-	3,780	-	-	**53,981**	165,842
End of year	11,373	683,131	11,432	56,669,380	2,321	-	**57,377,637**	55,704,219
Net Book Value	**-**	**333,449**	**41,149**	**21,643,463**	**-**	**59,829**	**22,077,890**	23,094,069